# NP6030

# SERVICE MANUAL

(For 220/240V)

REVISION 0 JAN. 1993

Canon

FY8-13C9-000

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# I. FEATURES

## 1. Designed with ecological considerations

- The copier uses special rollers for charging, thereby significantly suppressing the generation of ozone — to 0.01 ppm or less (maximum of 0.02 ppm or less); this translates to 1/100 or 1/1000 when compared with conventional copiers.
- The copier moves copy paper by *center reference feeding* to ensure good transport of recycled paper.

## 2. State-of-the-art features for enhanced user satisfaction

- For DIRECT mode, the reproduction ratio may be fine-tuned in 0.2% increments in X or Y direction independently, providing perfect document-to-copy reproduction ratios.
- The user may take advantage of enlarge layout or reduce layout for desired copy compositions.
- For production of professional-quality documents, the copier provides cover mode—in addition, interleaf mode makes production of OHP copies very easy.
- The copier's auto paper selection and auto ratio selection mechanisms take advantage of identification of up to B5R size.

## 3. Others

- merely 610 mm wide, the smallest in the world for its class.
- accommodates as many as 2550 sheets of copy paper (500-sheet cassette and 50-sheet multifeeder).
- designed with a 6-way pick-up mechanism.
- 30-second wait time, the shortest in its class.
- 4.9-second first copy time.
- newly developed ultra small XY zoom lenses, capable of zooming between 49% and 204%.
- large-capacity toner hopper, limiting the need for toner replenishment.

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# II. SPECIFICATIONS

## A. Copier

### 1. Type

| Item | Specification |
|---|---|
| Body | Desktop |
| Document counter | Fixed |
| Light source | Halogen lamp (290 W, 100/115V; 320W, 230V) |
| Lens | Zoom lens |
| Photosensitive medium | OPC |

### 2. System

| Item | | Specifications |
|---|---|---|
| Copying | | Indirect electrostatic |
| Charging | | Roller (direct charging) |
| Exposure | | Slit (moving light source) |
| Copy density adjustment | | Automatic (AE) or Manual |
| Development | | Dry (toner projection) |
| Pick-up | Automatic | 2, 3, 4, or 5 cassettes |
| | Manual | Multifeeder |
| Transfer | | Roller |
| Separation | | Curvature + Static eliminator |
| Cleaning | | Blade |
| Fixing | | Heat rollers (700W main + 600W sub, 110/115V; 750W main + 640W sub, 230V) |


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## 3. Performance

| Item | | | Specifications |
|---|---|---|---|
| Document type | | | Sheet, Book, 3-D object (2 kg max.) |
| Document size (max.) | | | A3 (297 × 420 mm)/LDG (11" × 17") |
| Reproduction ratio | | | DIRECT, 4R4E, 4R3E or 2R2E (Table 1-1); zoom (49% thru 204%) |
| Wait time | | | 30 sec or less (100V), 35 sec or less (115/230V)<br>*at 20°C or more* |
| First copy | | | 5.0 sec or less (A4, DIRECT, non-AE, pick-up from cassette 1) |
| Continuous copying | | | 100 sheets max. (may be modified between 1 and 100) |
| Copying speed | | | See Table 1-2. |
| Copy size | | | Cassette: A3 (11" × 17") to A5 (STMT)<br>Manual: A3 (11" × 17") to postcard (A6) |
| Copy paper type | Cassette | | Plain (64 to 80 g/m²), Tracing paper, Colored paper* |
| | Multifeeder | | Plain paper (64 to 128 g/m²), Tracing paper (SM1, GNT80**), Colored paper*, OHP film*/**, Postcard*, Label sheet* |
| | Two-sided/ Overlay | Automatic | Plain (64 to 80 g/m²), Colored paper*, Postcard** |
| | | Multifeeder | Plain (64 to 128 g/m²), Colored paper*, Postcard |
| Cassette | | | 500 sheets (w/o claw), Front loading |
| Delivery tray | | | 100 sheets (approx.) |
| Non-image width | One-sided | | 2.5 ±1.5 mm (leading/trailing edge), 2.5 ±1.5 mm (left/right) |
| | Two-sided/Overlay | | 2.5 ±2.0 mm (leading/trailing edge), 2.5 ±2.0 mm (left/right) |
| Auto clear | | | Available (2 min standard; may be modified between 1 and 9 min in 1-min increments or disabled) |
| Auto power-off | | | Available (2 hr standard; may be modified between 1 and 24 hr in 1-hr increments or disabled) |
| Options | | | • Sorter-C1/Stapler Sorter-C1<br>• Stapler Sorter-B2<br>• ADF-B1<br>• RDF-C1<br>• Control Card V<br>• Cassette Feeding Unit with Duplexing-G1<br>• Cassette Feeding Unit-F1<br>• Pedestal with Duplexing Unit-A1<br>• Cassette Feeding Unit-H1 |

* Specified by Canon.
** Correct curling before second insertion.
*** Separate sheets before placing on the manual tray to break static adhesion between sheets.

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## 4. Others

| Item | | Specifications | |
|---|---|---|---|
| Operating environment | Temperature | 7.5° to 32.5°C | |
| | Humidity | 5% to 85% | |
| | Atmospheric pressure | 0.8 to 1 atm | |
| Power supply | | Serial number | |
| | 100V 50/60Hz | LRBXXXXX, LRCXXXXX | |
| | 115V | NRDXXXXX, NREXXXXX | |
| | 230V | PRFXXXXX, PRGXXXXX<br>RRHXXXXX, RRJXXXXX<br>URKXXXXX, URLXXXXX<br>DAAXXXXX, BAAXXXXX<br>AAAXXXXX, CAAXXXXX | |
| Power consumption | Maximum | 1.5 kW or less | |
| | Standby | 0.18 kWh (average; reference only) | |
| | Continuous copying | 0.80 kWh (average, A4; reference only) | |
| Noise | Copying | 69 dB or less | *sound power level* under ISO standards |
| | Standby | 41 dB or less | |
| Ozone (8-hr average) | | 0.01 ppm or less; 0.02 ppm or less | |
| Dimensions | Width | 610 mm | |
| | Depth | 595 mm | |
| | Height | 535 mm, 949 mm (w/ cassette feeding unit) | |
| Weight | | 80 kg (approx.) | |
| Consumables | Copy paper | Keep wrapped to protect against humidity. | |
| | Toner | Avoid direct sunshine, and keep at 40°C, 85% or less. | |


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| | | | | |
|---|---|---|---|---|
| Reproduction ratios | DIRECT | 1:1 (±0.5%) | | |
| | EE | 230 V (Europe) | 115V | 230V (Australia/general) |
| | REDUCE I | 1:0.500 | 1:0.500 | 1:0.500 |
| | REDUCE II | 1:0.707 | 1:0.647 | 1:0.707 |
| | REDUCE III | 1:0.816 | 1:0.733 | |
| | REDUCE IV | 1:0.865 | 1:0.786 | |
| | ENLARGE I | 1:1.154 | 1:1.214 | 1:1.414 |
| | ENLARGE II | 1:1.224 | 1:1.294 | 1:2.000 |
| | ENALRGE III | 1:1.414 | 1:2.000 | |
| | ENALRGE IV | 1:2.000 | | |
| | ZOOM | 49% to 204% (in 1% increments) | | |

**Table 1-1 Default Reproduction Ratios**

| Reproduction ratio | | Copy size | Copies | |
|---|---|---|---|---|
| | | | 100V | 230V |
| DIRECT | 1:1 (+0.5%) | A3 (297 × 420) | 18 (18) | 18 (18) |
| | | A4 (210 × 297) | 30 (27) | 31 (27) |
| | | A5 (148 × 210) | 30 (27) | 31 (27) |
| | | B4 (257 × 364) | 20 (20) | 20 (20) |
| | | B5 (182 × 257) | 30 (27) | 31 (27) |
| | | A4R (297 × 210) | 23 (22) | 23 (22) |
| | | A5R (210 × 148) | 30 (27) | 31 (27) |
| | | B5R (257 × 182) | 26 (24) | 26 (24) |
| REDUCE | 1:0.500 (+1.0%) | A3 → A5R | 26 | 26 |
| | 1:0.707 (+1.0%) | A3 → A4R | 22 | 22 |
| | | B4 → B4R | 24 | 24 |
| | 1:0.816 (+1.0%) | B4 → A4R | 22 | 22 |
| | 1:0.865 (+1.0%) | A3 → B4 | 19 | 19 |
| | | A4 → B5 | 30 | 31 |
| ENLARGE | 1:2.000 (+1.0%) | A5R → A3 | 19 | 19 |
| | 1:1.414 (+1.0%) | A4R → A3 | 18 | 18 |
| | | B5R → B4 | 18 | 18 |
| | 1:1.224 (+1.0%) | A4R → B4 | 21 | 21 |
| | 1.154 (+1.0%) | B4 → A3 | 18 | 18 |
| | | B5 → A4 | 24 | 24 |

**Table 1-2 Copying Speeds (100/230V)**

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| Reproduction ratio | | Copy size | Copies |
|---|---|---|---|
| DIRECT | 1:1 (+0.5%) | LTR | 30 (26) |
| | | 11 × 17 | 18 (17) |
| | | LGL | 20 (20) |
| | | LTRR | 25 (23) |
| | | STMT/STMTR | 30 (26) |
| REDUCE | 1:0.786 | LGL → LTRR | 24 |
| | 1:0.733 | 11 × 17 → LGL | 21 |
| | | 11 × 15 → LTRR | 23 |
| | 1:0.647 | 11 × 17 → LTRR | 22 |
| | 1:0.500 | 11 × 17 → STMTR | 25 |
| ENLARGE | 1:2.000 | STMTR → 11 × 17 | 19 |
| | 1:1.294 | LTRR → 11 × 17 | 18 |
| | 1:1.214 | 11 × 17 → STMTR | 25 |

**Table 1-2 Copying Speeds (115V)**

*Specifications subject to change for product improvement.*


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## B. Cassette Feeding Unit F1 and Cassette Feeding Unit-H1

| | |
|---|---|
| Copy paper | As per copier. |
| Cassette | As per copier. |
| Power supply | 24 VDC (from copier) |
| Dimensions | 610W × 608D × 414H mm |
| Weight | 45.5 kg (F1)/44.0 kg (H1) |

## C. Cassette Feeding Unit with Duplexing-G1 and Pedestal with Duplexing-A1

| | |
|---|---|
| Copy paper (w/ duplexing) | A3, A4, B5, A4R, B5R (plain paper, 64 to 80 g/m$^2$; colored paper*) |
| Duplexing unit | Front loading; 50 sheets (max.; all sizes) |
| Cassette | As per copier. |
| Power supply | 24 VDC (from copier) |
| Dimensions | 610W × 608D × 414H mm |
| Weight | 54.0 kg (G1)/52.5 kg (A10) |

**Specified by Canon.*

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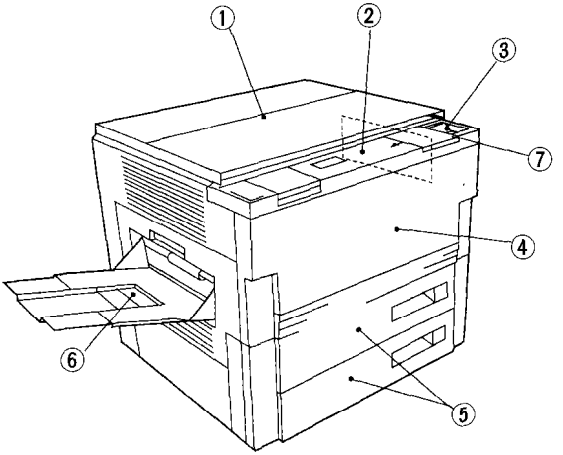
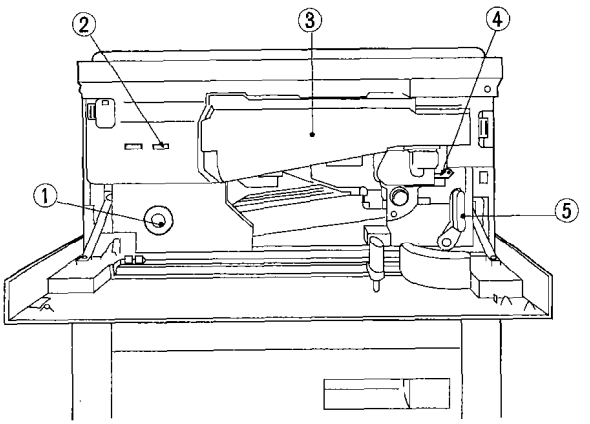
# III. NAMES OF PARTS

## A. Exterior View




① Copyboard cover
② Control panel
③ Power switch
④ Front door
⑤ Cassette
⑥ Copy tray

**Figure 1-1**




① Fixing assembly knob
② Total copy counter
③ Hopper
④ Lock lever (developing assembly)
⑤ Release lever (feeding assembly)

**Figure 1-2**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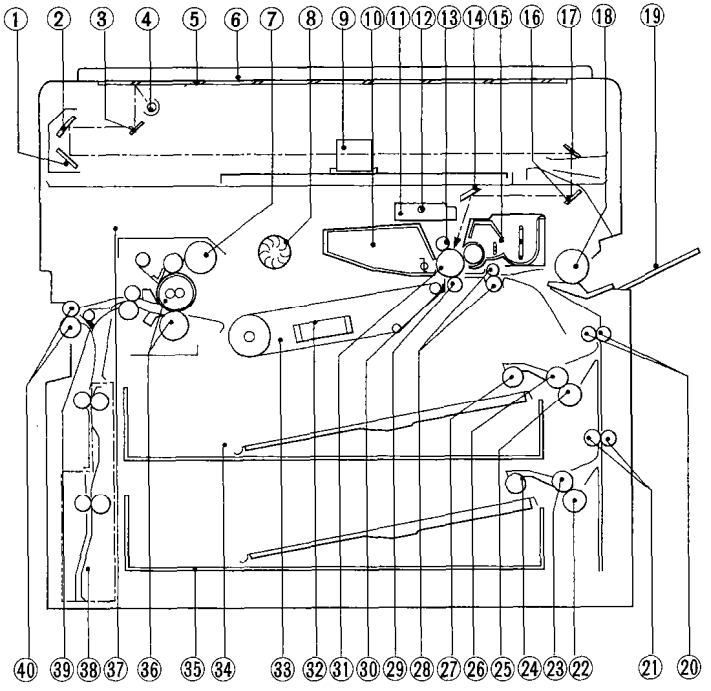
# B. Cross Section

## 1. Copier




① No. 3 mirror
② No. 2 mirror
③ No. 1 mirror
④ Scanning lamp
⑤ Copyboard glass
⑥ Copyboard cover
⑦ Cleaning belt
⑧ Exhaust fan
⑨ Lens
⑩ Drum cleaning assembly
⑪ Pre-exposure/Blank exposure unit
⑫ Pre-exposure lamp
⑬ Primary charging roller
⑭ No. 6 mirror
⑮ Developing assembly
⑯ No. 5 mirror
⑰ No. 4 mirror
⑱ Multifeeder pick-up roller
⑲ Multifeeder tray
⑳ Vertical path roller 1
㉑ Vertical path roller 2
㉒ Cassette 2 separation roller
㉓ Cassette 2 feeding roller
㉔ Cassette 2 pick-up roller
㉕ Cassette 1 separation roller
㉖ Cassette 1 feeding roller
㉗ Cassette 1 pick-up roller
㉘ Registration roller
㉙ Transfer roller
㉚ Static eliminator
㉛ Photosensitive drum
㉜ Feeding fan
㉝ Feeding assembly
㉞ Cassette 1
㉟ Cassette 2
㊱ Fixing roller
㊲ Exhaust fan
㊳ Delivery vertical path assembly (option)
㊴ Delivery paper deflector
㊵ Delivery roller

**Figure 1-3**

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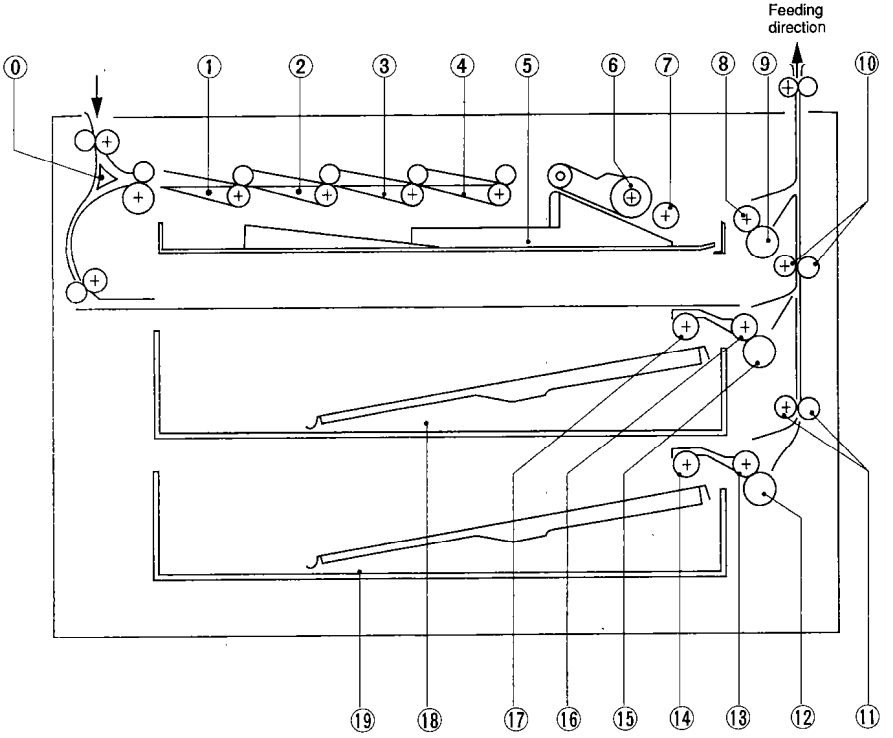
## 2. Cassette Feeding Unit with Duplexing-G1




① No. 2 paper deflector
② L paper deflector
③ M paper deflector
④ S paper deflector
⑤ SS paper deflector
⑥ Holding tray
⑦ Feeding roller
⑧ Holding tray pick-up roller
⑨ Duplexing feeding roller
⑩ Duplexing separation roller
⑪ Duplexing vertical path roller 4
⑫ Duplexing vertical path roller 5
⑬ Cassette 5 separation roller
⑭ Cassette 5 feeding roller
⑮ Cassette 5 pick-up roller
⑯ Cassette 4 separation roller
⑰ Cassette 4 feeding roller
⑱ Cassette 4 pick-up roller
⑲ Cassette 4
⑳ Cassette 5

**Figure 1-4**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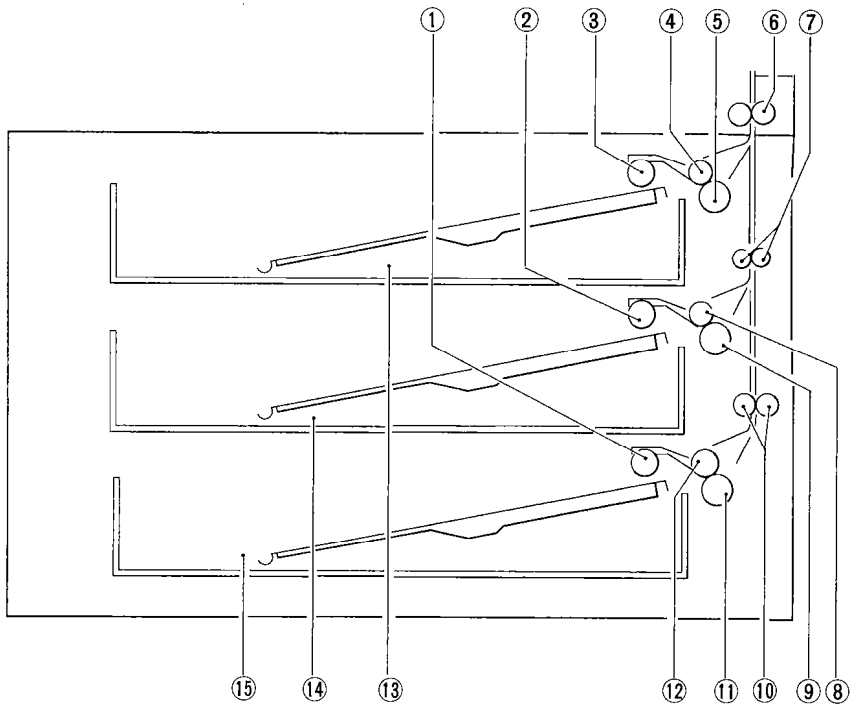
## 3. Cassette Feeding Unit-F1




① Cassette 5 pick-up roller
② Cassette 4 pick-up roller
③ Cassette 3 pick-up roller
④ Cassette 3 feeding roller
⑤ Cassette 3 separation roller
⑥ Vertical path roller 3
⑦ Vertical path roller 4
⑧ Cassette 4 feeding roller
⑨ Cassette 4 separation roller
⑩ Vertical path roller 5
⑪ Cassette 5 separation roller
⑫ Cassette 5 feeding roller
⑬ Cassette 3
⑭ Cassette 4
⑮ Cassette 5

**Figure 1-5**

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# IV. OPERATIONS

## A. Control Panel

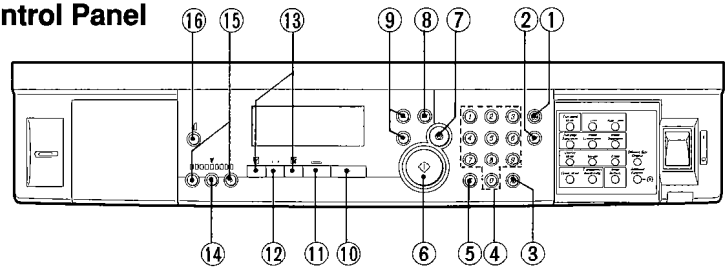


**Figure 1-6**

| Key | Description | Remarks |
|---|---|---|
| ① PRE-HEAT key | Press it to select or deselect pre-heat mode. | Returns to normal after deselection in 0 sec. |
| ② INTERRUPT key | Press it to interrupt an ongoing copying cycle. | |
| ③ ID key | Effective when ID mode is selected (by the user); Copying ready in response to a correct ID; Requests another input after copying cycle and another press on the key; As many as 50 IDs may be set. | To store an ID, press the USER key, ID key, STOP key, and USER key in sequence. |
| ④ Numeric keypad | Use it to set the copy count, or to enter numerals when setting modes. | As high as '100' may be entered as a copy count. |
| ⑤ CLEAR key | Press it to return the copy count to '1', or to clear numerals when setting modes. | |
| ⑥ COPY START key | Press it to start copying operation. | Auto start mode is available. |
| ⑦ STOP key | Press it to stop copying operation. | |
| ⑧ OK key | Press it to acknowledge indications shown on the display. | |
| ⑨ ⍓ ⍐ key | Press it to select a setting shown on the display. | |
| ⑩ RESET key | Press it to return to the standard copy modes: DIRECT; copy count, 1; paper selection, auto. | |
| ⑪ PAPER SELECT key | Press it to select auto paper select mode, or to select a cassette (paper feeding unit). | |
| ⑫ DIRECT key | Press it to select DIRECT (100%) mode. | |
| ⑬ REDUCE/ENLARGE key | Press it to select REDUCE/ENLARGE mode (default ratios). | |
| ⑭ AE key | Press it to select or deselect AE mode. | |
| ⑮ COPY DENSITY key | Use it to manually adjust copy density. | |
| ⑯ SORT key | Use it to select sort, staple/sort, or group mode. Sort mode effective only when a stapler sorter or an RDF is installed; Staple/Sort mode effective only when a stapler sorter is installed; Group mode effective only when a stapler sorter or a sorter is installed. | |

**Table 1-3**


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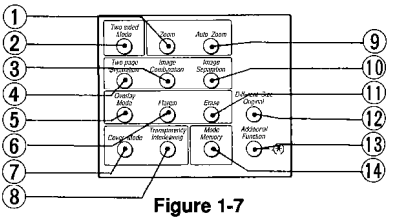


**Figure 1-7**

| Key | Description | Remarks |
|---|---|---|
| ① ZOOM key | Press it to select or deselect zoom mode. May be between 49% and 204% in 1% increments. | Zoom program available. |
| ② TWO-SIDED key | Press it to select or deselect two-sided mode. One-sided to Two-sided; Page Separation; or, Two-sided to Two-sided. | |
| ③ REDUCE LAYOUT key | Press it to select or deselect reduced layout mode. May be 2-on-1 for copying two documents on one sheet; 4-on-1 for copying four documents on one sheet. | |
| ④ PAGE SEPARATION key | Press it to select or deselect page separation mode (either page separation or two-sided page separation). | |
| ⑤ OVERLAY key | Press it to select or deselect overlay mode (overlay or page separation overlay). | |
| ⑥ BIND key | Press it to select or deselect binding mode. May be adjusted between 1 and 20 mm in 1mm increments; 10 mm at time of shipment; may be left, right, top, bottom (cover/back cover shift or back cover shift). | |
| ⑦ COVER key | Press it to select or deselect cover mode. May be cover + back cover; in addition, the presence/absence of copy images may be specified. | |
| ⑧ OHP OVERLEAF key | Press it to select or deselect OHP interleaf mode. Allows insertion of one sheet of paper between OHPs; in addition, the presence/absence of copy images may be specified. | |
| ⑨ AUTO RATIO key | Press it to select or deselect auto ratio mode. | |
| ⑩ ENLARGE LAYOUT key | Press it to select or deselect enlarge layout mode.<br>May be 1-on-2 for copying one document on two sheets; 1-on-2 for copying one two-sided document on two sheets; 1-on-2 for copying one two-sided document on two one-sided sheets; 1-on-2 for copying one two-sided document on 2 two-sided sheets.<br>May be 1-on-4 for copying one document on four sheets; 1-on-4 for copying one one-sided document on four two-sided copies. | |
| ⑪ FRAME ERASE key | Press it to select or deselect frame erasing mode. May be sheet frame erasing or document frame erasing (book frame erasing). | |
| ⑫ MIXED SIZE key | Press it to select mixed size mode when using a feeder. May be A4 an A3, B5 and B4, A5 and A4R, LTR and 11"×17", LTRR and LGL, STMT and LGL, STMT and LTRR; each pair must be of the same feeding width. | |
| ⑬ USER key | Press it to select or deselect user mode. May be used to change or adjust default settings and standard modes. | |
| ⑭ MODE MEMORY key | Press it to select or deselect modes. May be used to store (up to 3 modes) or call up any stored modes. | Not applicable to user mode settings. |

**Table 1-4**

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## B. Making Copies

1) Switch the copier on.
   Normally, the copier's wait time is about 30 sec (at 20°C).
2) Open the copyboard cover, and place the document face down along the size index.
3) Press the DIRECT, REDUCE, ENLARGE, or ZOOM key as necessary.
4) If you want to specify the copy size, select the cassette containing the desired paper.
   • If necessary, pick any cassette and adjust its guide plate to suit the paper of your choice.
5) Press the COPY DENSITY key to adjust the copy density as necessary.
   ① If you want a darker copy, press *darker* to move the index to the right; if you want a lighter copy, press *lighter* to move the index to the left.

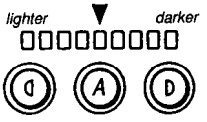


**Figure 1-8**

6) Specify the number of copies to make (1 through 100) using the numeric keypad, and make sure that the counter indicates the correct number.
   ① If the numeric keypad does not operate or if you made a mistake, try again after pressing the CLEAR/COPY STOP key.
7) Press the COPY START key.
   ① Set auto start mode as necessary.
   ② If an RF is installed, the document pages on the document tray will be picked up automatically for copying.
   ③ All document pages are copied automatically for the specified number.
   ④ Once copying operation starts, keys other than the CLEAR/STOP key, RESET key, and COPY DENSITY key are disabled until the last copy is made.
   ⑤ You can switch from automatic density adjustment to manual density adjustment even after copying operation has started; however, you cannot switch from manual adjustment to automatic adjustment.

**Reference:**

If you find the copies to be too dark or too light in AE mode, you can change the density with the COPY DENSITY key. Check the COPY DENSITY indicator for reference.

   ⑥ To stop the operation during continuous copying, press the CLEAR/STOP key or the RESET key. The copier stops after processing the current copy cycle.
   ⑦ After making the specified number of copies, the copier indicates the initial copy count on its display. If the copier stops in the middle of a copying run while indicating the ADD PAPER message, replenish the cassette with paper, and press the COPY START key. The copier will make the remaining number of copies.
   ⑧ If a jam occurs in the middle of a copying run, the copier stops and indicates the JAM message on its display. When the jam is removed, the copier will indicate the remaining number of copies.
   ⑨ If you leave the copier alone for about 2 min*, the copier will return to the standard modes.
   **May be modified.*

**Note:**
1. Feed postcards in vertical orientation.
2. Feed A4 label sheets in landscape orientation.


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## C. Auto Start

You can select auto start mode while the copier is in the wait period after power-on.

To select the mode, set a document, select copy modes, and press the COPY START key.

The WAIT indicator changes from green to orange to indicate that auto start mode has been selected; you cannot use interrupt mode.

The copier starts making copies in the specified copy modes as soon as the wait period is over.

To deselect auto start mode, press the CLEAR/STOP key or the RESET key.

## D. Making Two-Sided Copies and Overlay Copies Manually

You can make two-sided or overlay copies by manually feeding sheets of paper.

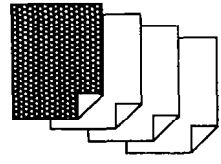
When using the function, keep the following in mind:

① When turning over the sheet, be careful to maintain the same orientation (front and rear).
② Make sure that the paper is not moist.
③ Make sure that the paper is not curling.
④ Cool the paper sufficiently after first copying; feed it for second copying only after removing the curl, if any.
⑤ Use paper appropriate for the job (60 to 128 g/m²).
⑥ If you are using postcards or thick paper (128 g/m²), be extra careful to remove all curl.

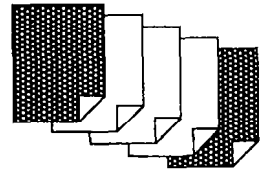
## E. Using Cover Mode

If you are making copies using a DF, you can add separate sheets to serve as the front cover and back cover of the finished set of copies.

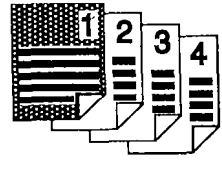
① Adding the Front Cover Only



② Adding Both Front and Back Covers



① Copying on the Front and Back Covers




Place the sheets to serve as front or back covers on the multifeeder tray.

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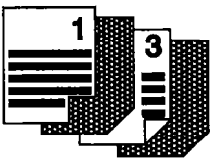
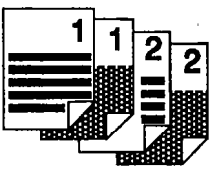
## F. Using OHP Interleaf Mode

If you are making copies on OHP sheets, you can add plain sheets of paper in between OHP sheets.

① Adding Copy Paper




② Copying on Copy Paper




Set OHP sheets on the multifeeder tray. You can also use the function using a DF.

## G. Storing IDs

You can store 4-digit IDs so that the copier will not operate unless an appropriate ID is entered. You can store as many as 50 IDs, and generate a copy count (cumulative copy volume) for each number.

■ Storing IDs

1) Press the USER key, ID key, STOP key, and USER key in sequence.

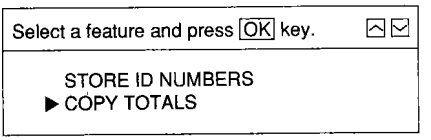



**Figure 1-9**

2) Press the OK key.
3) Enter an ID number using the numeric keypad.

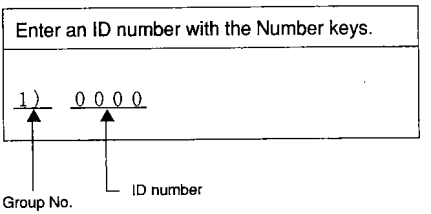



**Figure 1-10**

4) Press the OK key to acknowledge the group number; then, enter an ID number.
5) When you have entered all IDs, press the ID key to acknowledge the input.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■ Checking the Copy Volume

You can check the number of copies that have been made under each ID number.

1) Press the USER key, ID key, STOP key, and USER key in sequence.
2) Press the ▽ key to select 'count', and press the OK key; see Figure 1-8.
3) Select 'count by group', and press the OK key.

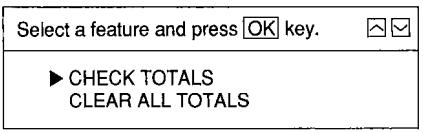


**Figure 1-11**

4) Press the ▽ key to display the desired group and its copy count.

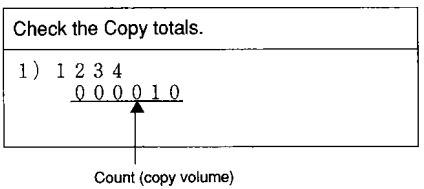


**Figure 1-12**

5) Press the OK key to return to the initial window.

**Note:**
**You cannot reset the individual counts to '0'; to reset all counts to '0', select 'counter all clear', and press the OK key.**

# H. Using the User Mode

The copier provides user mode so that the user can set the following to suit his/her needs:

- settings
- adjustment/cleaning

## 1. Using 'Settings' in User Mode

1) Press the USER key.

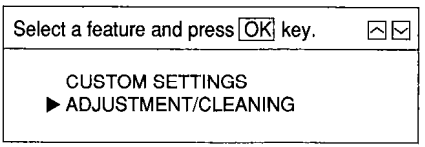


**Figure 1-13**

2) Check to see that 'settings' is preceded by ▶; THEN, PRESS THE OK KEY.

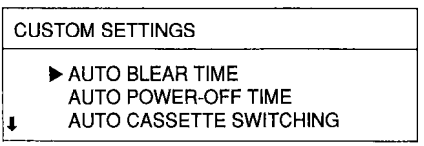


**Figure 1-14**

3) Move ▶ by pressing the △ or ▽ key to select the desired mode; then, press the OK key.
4) Enter the desired setting; see Table 1-5.

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## 2. Using 'Adjustment/Cleaning' in User Mode

1) Press the USER key.

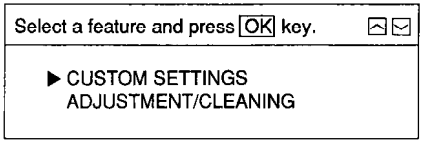


**Figure 1-15**

2) Move ▶ to 'adjustment/cleaning' by pressing the ▽ key; then, press the OK key.

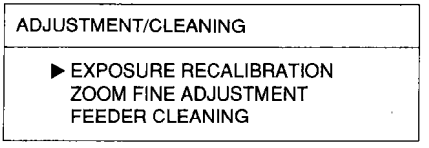


**Figure 1-16**

3) Move ▶ by pressing △ or ▽ key to select the desired mode; then, press the OK key.
4) Enter the desired setting; see Table 1-5.


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■ Using 'Settings' and 'Adjustment/Cleaning' in User Mode

| Item/Default | Description | Operation |
|---|---|---|
| Auto Clear; 2 min | • Select it to change the auto-clear time. You can set it between 1 and 9 min in 1-min increments; set it to '0' to disable the function altogether. | 1) Enter a setting using the numeric keypad, and press the OK key. |
| Auto Power-Off Time; 2 hr | • Select it to change the auto power-off time. You can set it between 1 and 24 hr in 1-hr increments. | 1) Enter a setting using the numeric keypad, and press the OK key. To deactivate the function, use service mode (S5S). |
| Auto Cassette Change; ON | • Select or deselect the auto cassette change function; ON or OFF. | Select 'ON' or 'OFF' using the △ or ▽ key; then, press the OK key. |
| Manual Size Input; OFF | • Select or deselect manual size input; ON or OFF. | Select 'ON' or 'OFF' using the △ or ▽ key; then, press the OK key. |
| Sort Single Document; ON | • Select or deselect the single document sorting function; ON or OFF. | Select 'ON' or 'OFF' using the △ or ▽ key; then, press the OK key. |
| Store Standard Modes/Reset Standard Mode | Use it to store or reset the standard modes: copy density, AE; paper selection, auto; copy count, 1; delivery, non-sort copying; from 'one-sided document' to 'one-sided copy'; ratio 100%. | Set the standard modes before entering user mode; bring up the screen, and select 'store standard modes'; then, select the desired settings using △ or ▽ key, and press the OK key. |
| Density Correction | Correct 'F5 density' if copies made with the manual correction index set to the center (F5) seems somewhat darker or lighter than the document. | Press the △ key to obtain darker copies; press the ▽ key to obtain lighter copies; then, press the OK key. |
| Zoom Fine Adjust | Use it to fine-adjust if a discrepancy is noted between the size of the document and the size of the copy made in DIRECT. You can fine-tune independently in both X and Y directions. | Press the OK key to select X or Y; press the △ key to increase the ratio, or press the ▽ key to decrease the ratio; each scale represent 0.2%; press the USER key to acknowledge the new settings. |
| Feeder Cleaning | If you note black lines or dirt on the document after it has been fed through the ADF/RF, set blank copy paper on the feeder and press the OK key; the paper will be circulated, thereby cleaning the document pick-up rollers. | Set about 10 sheets of black copy paper (A4) in the ADF/RF, and press the OK key. To stop, press the CLEAR key or the STOP key. |

**Table 1-5**

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# V. WARNINGS AND ACTIONS TO TAKE

## A. JAM Message

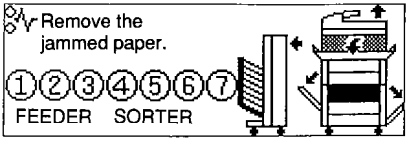


**Figure 1-17**

The message appears when there is a jam inside the copier. Go through the following steps to remove the jam.

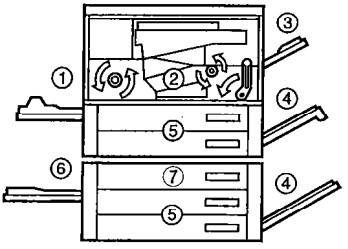


**Figure 1-18**

### 1. ① Is On (zone 1)

1) Open the left door, and remove the jam through the outlet of the delivery assembly as shown in Figure 1-19.

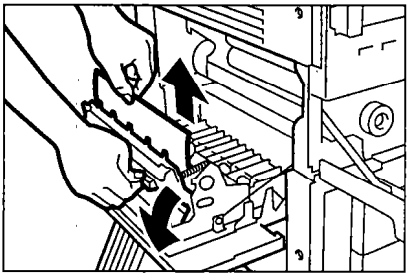

**Figure 1-19**

2) Turn the fixing knob counterclockwise to remove the jam.

### 2. ② Is On (zone 2)

1) Release the feeding assembly, and turn the registration roller to remove the jam.

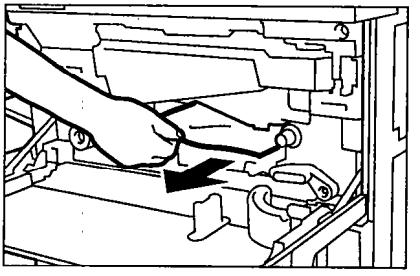

**Figure 1-20**


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### 3. ③ Is On (zone 3)

1) Remove the copy paper from the multifeeder, and remove the jam from the multifeeder.
2) Open the copier's right door, and remove the jam while pushing the green lever as shown in Figure 1-21.

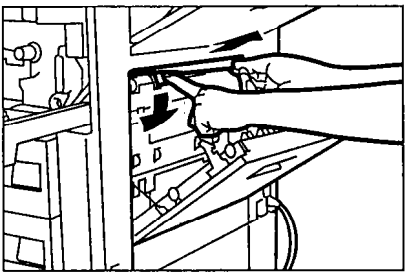

Figure 1-21

### 4. ④ Is On (zone 4)

1) Open the copier's right door, and the cassette feeding unit's right door; then, remove the jam.

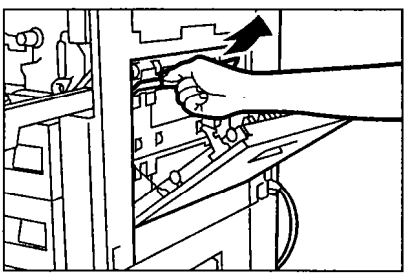

Figure 1-22

### 5. ⑤ Is On (zone 5)

1) Open the copier's right door and the cassette feeding unit's right door; then, slide out the cassette.
2) Remove the jam from the cassette.

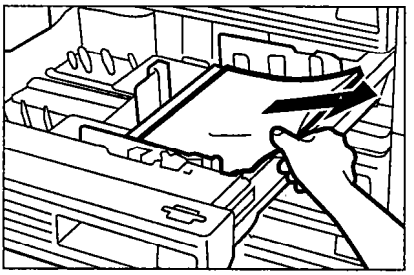

Figure 1-23

### 6. ⑥ Is On (zone 6)

1) Open the cassette feeding unit's left door.
2) Remove the jam.

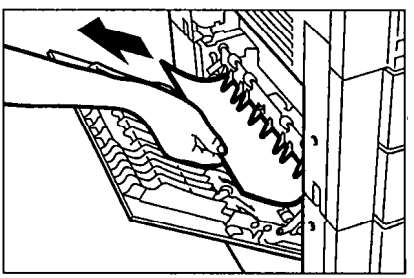

Figure 1-24

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### 7. ⑦ Is On

1) Open the cassette feeding unit's right door and left door.
2) Slide out the duplexing assembly, and open the cover; then, remove the jam.

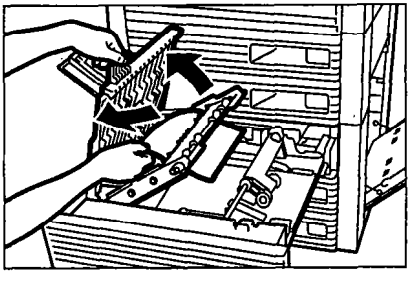

Figure 1-25

## B. ADD PAPER Message

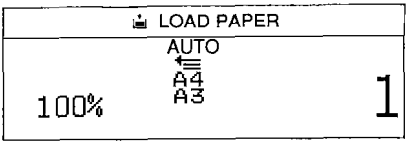


Figure 1-26

The message appears when the selected cassette is running out of paper. Replenish the cassette as follows:

### 1. Adding Paper

1) Hold the grip of the cassette, and slide it toward the front until it stops.
2) Take out copy paper from its package as shown in Figure 1-27.

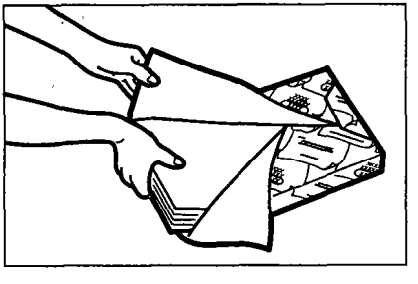

Figure 1-27


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3) Turn over the paper, and place it butted against the right side of the cassette; the face of the paper showing in Figure 1-27 should be the bottom of the stack.

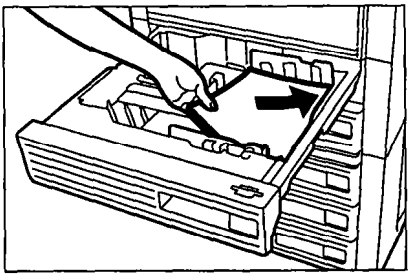

Figure 1-28

4) Set the cassette in the copier.

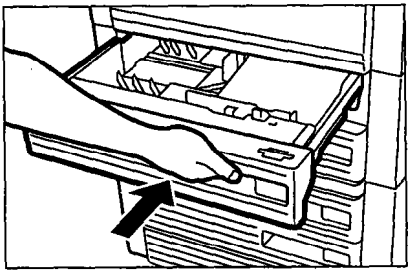

Figure 1-29

## 2. Changing the Cassette Size

1) Hold the lever as shown in Figure 1-30, and slide the length guide until it is positioned over the appropriate paper size index.

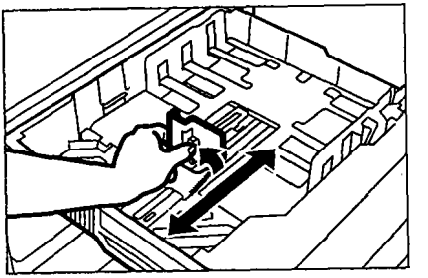

Figure 1-30

**Note:**
To accommodate A3, slide the length guide all the way to the left end, and shift the guide down to the right.

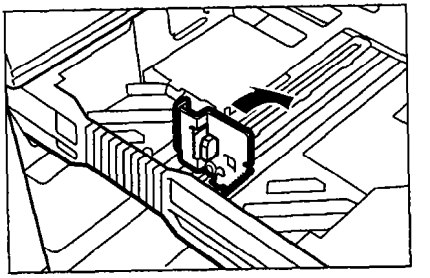

Figure 1-31

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2) Hold the lever as shown in Figure 1-32, and slide the width guide until it is positioned over the appropriate paper size index.

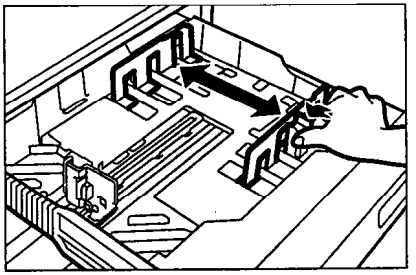

Figure 1-32

3) Replace the size plate with the appropriate size plate.

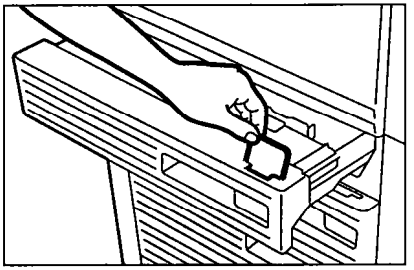

Figure 1-33

## C. ADD TONER Message

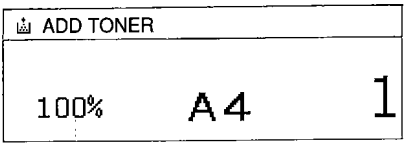


Figure 1-34

The message appears when the copier is running short of toner. Supply toner as follows:

1) Open the front door.
2) Swing out the hopper to the front.

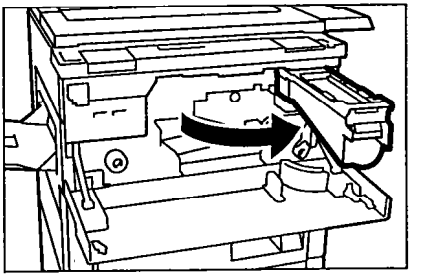

Figure 1-35

3) Shake the toner cartridge well end to end several times to even out the toner inside it.

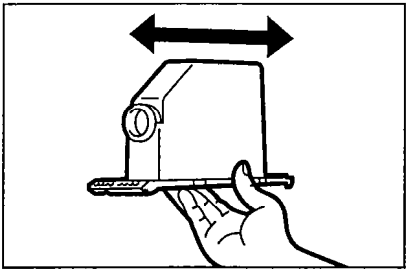

Figure 1-36


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4) Fit the boss on the toner cartridge into the groove at the rear of the hopper, and press the cartridge until a click is heard.

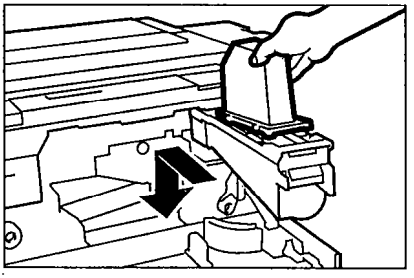

**Figure 1-37**

5) While holding the toner cartridge, pull out the black tab from the hopper to the front.

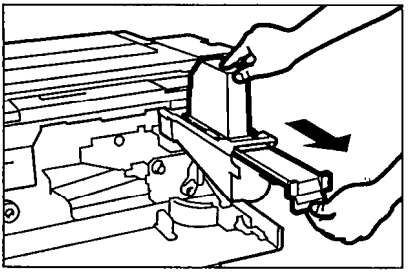

**Figure 1-38**

6) While holding the toner cartridge, pull out the gray tab to the front until it stops.
7) Tap lightly on the top of the toner cartridge so that all toner is transferred to the hopper.
8) Push the grip of the hopper toward the rear until a click is heard.
9) Detach the toner cartridge from the hopper.
10) Put the hopper back to its original position.
11) Close the front door.

**Note:**
For supplying toner at time of installation, see CHAPTER 5.

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# VI. ROUTINE MAINTENANCE BY THE USER

Instruct the user to clean the following parts at least once a week:

1) Copyboard Glass
   Wipe it with a moist cloth; then, dry-wipe it.
2) Copyboard Cover
   Wipe it with a cloth moistened with a solution of mild detergent; then, dry-wipe it.


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# I. IMAGE FORMATION

## A. Outline

The copier uses the direct charging/transfer method, and its mechanisms are arranged as shown in Figure 2-1.

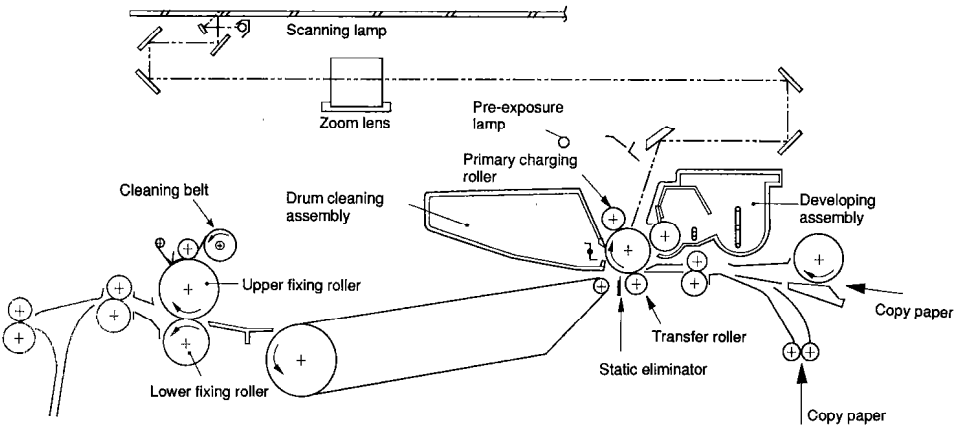


**Figure 2-1**

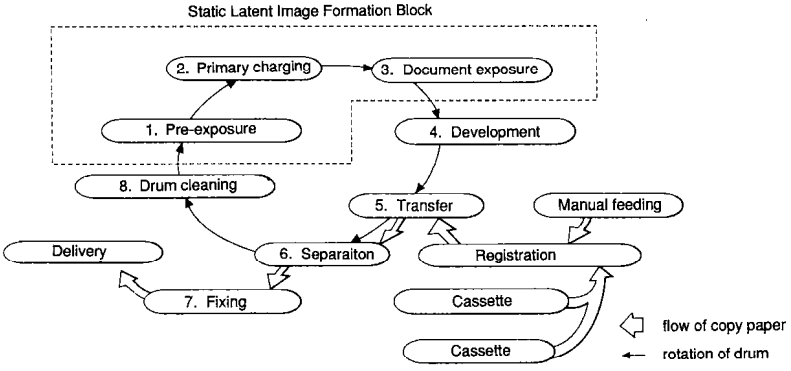


**Figure 2-2**

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The copier's image formation process consists of the following eight steps.

step 1 Pre-exposure
step 2 Primary corona charging (negative DC)
step 3 Document exposure
step 4 Development (AC and negative DC bias)
step 5 Transfer (negative DC)
step 6 Separation (curvature and static eliminator)
step 7 Fixing
step 8 Drum cleaning

The photosensitive drum has a two-layer construction: the outside is a photo conductive layer (organic photo conductor; OPC); and the inside, a conductive aluminum base.

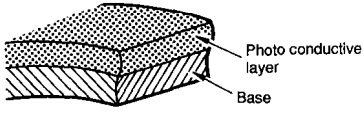


Figure 2-3

## B. Static Latent Image Formation Block

The block consists of three steps. At the end of the block, negative charges on the photosensitive drum corresponding to the black areas of the document are left behind, while removing negative charges on the photosensitive drum corresponding to the white areas of the document.

The presence/absence of negative charges on the photosensitive drum forms images not visible to the human eye—therefore, the name *static latent images.*

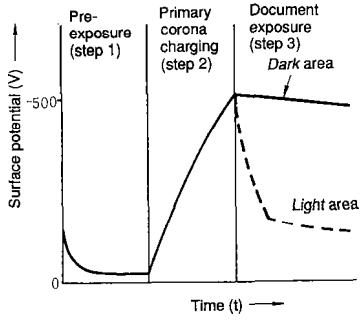


Figure 2-4


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## C. Pre-Exposure (step 1)

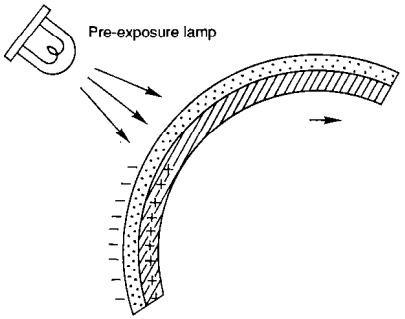


**Figure 2-5**

The pre-exposure lamp illuminates the surface of the photosensitive drum in preparation for primary corona charging. This removes residual charges from the surface of the photosensitive drum, ensuring even copy density.

## D. Primary Corona Charging (step 2)

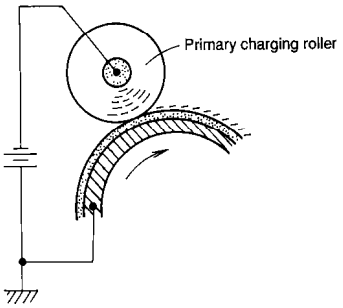


**Figure 2-6**

The copier uses a special roller to directly charge the photosensitive drum. This roller is made of conductive rubber, and is called *primary charging roller*. The roller requires less application voltage than corona wires, and generates virtually no ozone.

The primary charging roller is used exclusively for charging the photosensitive drum, and is independent of the transfer roller.

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## E. Document Exposure (step 3)

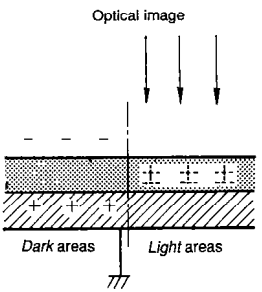


**Figure 2-7**

The document is exposed, and the optical image of the document is directed to the surface of the drum to neutralize the charges on the *light* areas.

## F. Development (step 4)

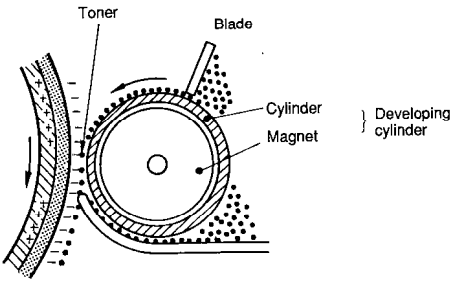


**Figure 2-8**

As shown in Figure 2-8, the developing assembly consists of a fixed magnet, a cylinder that rotates around the magnet, and a magnetic blade.

The copier's toner is a one-component toner consisting mainly of magnetite and resin.

The toner has insulating characteristics, so that it becomes charged to a positive potential by friction against rotating cylinder.

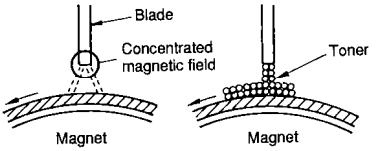


**Figure 2-9**


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A concentrated magnetic field occurs from the magnet to the tip of the blade, and the field is used to attract the toner.

The toner within the magnetic field has strong bond to the blade, and is virtually immobile, ensuring a uniform layer of toner on the cylinder.

An AC bias and a DC bias (negative component) are applied to both developing cylinder and blade at the same time to generate developing bias. The negative component of the developing bias is greater than the positive component.

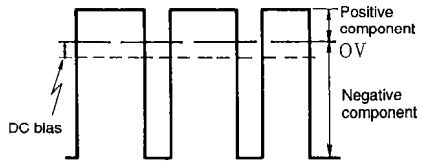


**Figure 2-10**

During copying operation, the toner is attracted to the photosensitive drum because of the surface potential of the drum and the developing bias (positive component), thereby turning the static latent images to visible images. Excess toner is then repelled from the photosensitive drum by the surface potential of the drum and the developing bias (negative component).

The AC bias (frequency, in particular) affects gradation of the copies; the lower the frequency, the better the gradation — but with increased likelihood of fogging. The DC bias, on the other hand, affects the density of the copies; the higher the bias (closer to 0V), the darker the copies — but with increased likelihood of fogging.

## G. Transfer (step 5)

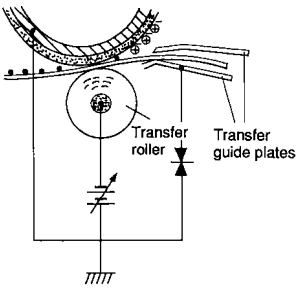


**Figure 2-11**

The back of copy paper is charged by the transfer roller to a negative potential to attract the positively charged toner from the photosensitive drum.

This way of transferring images is called *roller transfer*, and requires less transfer voltage compared to the corona transfer method and generates virtually no ozone.

To prevent soiling the back of copy paper or poor transfer, the transfer guide is grounded through a varistor.

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**Reference:**

If the transfer guide was directly grounded, the charges that should be on the back of the paper would escape, leading to poor transfer. If the guide was completely separated, on the other hand, it would collect toner, ultimately soiling the back of paper.

**Reference:**

If the image on the photosensitive drum fails to move to the copy paper because of a jam or other faults, the transfer charging roller could become soiled with toner.

To prevent such a problem, the copier uses a positive transfer voltage during wait and initial/last rotation periods and when the scanner is moving in reverse, thereby moving the positively charged toner from the transfer roller back to the photosensitive drum.

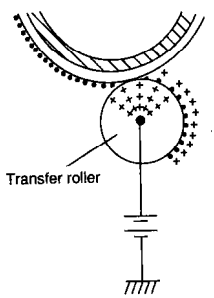


**Figure 2-12**

## H. Separation (step 6)

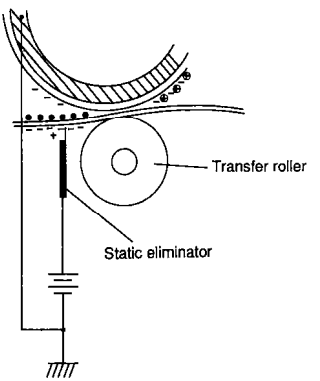


**Figure 2-13**

The copier uses curvature separation to separate copy paper from the photosensitive drum. Since this method relies on the body of paper, some types of paper with little body tends to resist separation. To prevent such paper from wrapping around the drum, a positive voltage is applied to the separation static eliminator, thereby weakening the bond between paper and drum to facilitate separation.


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## I. Fixing (step 7)

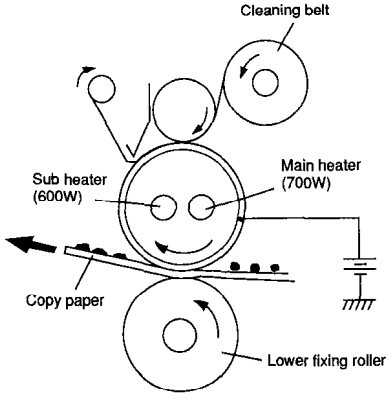


**Figure 2-14**

The toner image transferred to the copy paper moves between two heat rollers (halogen lamps) and becomes fused to the fibers of the paper; the upper roller is processed for a thinner coating than conventional rollers.

To prevent jams and toner offset, a cleaning belt impregnated with silicone oil is placed in contact with the upper roller. The belt is moved by a take-up mechanism, cleaning the roller while applying silicone oil at the same time.

Further, to additionally prevent toner offset, a positive DC bias is applied to the upper fixing roller, thereby repelling excessive toner to the copy paper.

## J. Drum Cleaning (step 8)

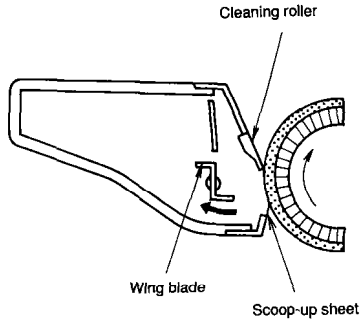


**Figure 2-15**

In this step, the cleaning blade scrapes the toner remaining on the surface of the photosensitive drum in preparation for the next copying cycle; the scraped toner is gathered by the scoop-up sheet, and forwarded to the rear of the copier by the wing blade.

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# II. AUXILIARY PROCESSES

## 1. Blank Exposure

Blank exposure is performed to create non-image areas on reduced copies by removing the surface potential of their corresponding areas on the photosensitive drum; the process is also performed to suit different copy sizes.

The light from the pre-exposure lamp is reflected by the reflecting plate, and directed to the photosensitive drum.

To create non-image areas between two sheets of copy paper, the light from the pre-exposure lamp is reflected by a different reflecting plate so that it is directed over the entire length of the drum.

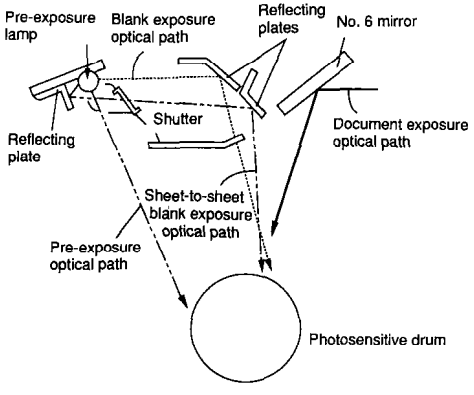


**Figure 2-16**


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# I. BASIC MECHANISMS

## A. Functional Construction

The copier can be divided into the following four functional blocks: pick-up/feeding system, exposure system, image formation system, and control system.

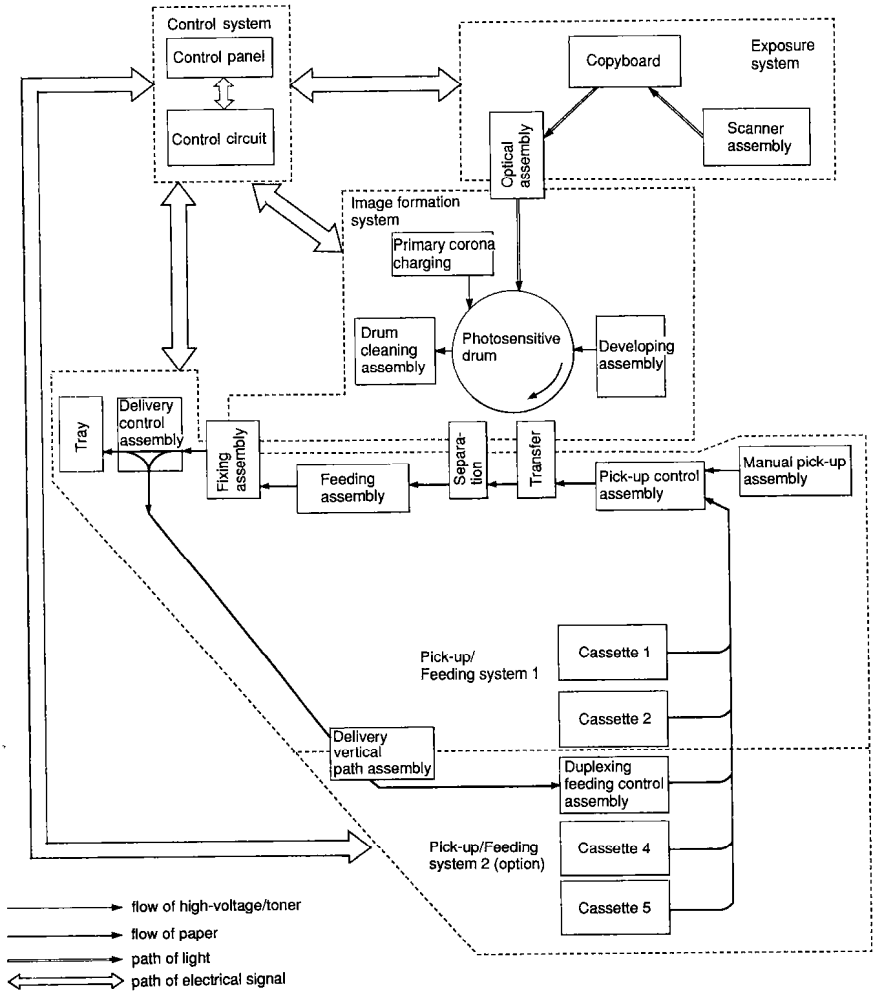


**Figure 3-101**

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## B. Outline of Electrical Circuit

The copier's main electrical mechanisms are controlled by the two microprocessors and the five LSIs on the DC controller PCB and the microprocessor on the composite power supply PCB.

The RAM (Q115) on the DC controller PCB is backed up by a lithium battery (BAT101), and is used to store important data.

The functions of each IC in the copier are as follows:

**DC Controller PCB**

Microprocessors

Q102 CPU (master)

- controls copying sequence

Q109 CPU (slave)

- reads analog signals
- controls lens motor, scanner drive motor, and blank motor

ICs

Q106 (gate array)

- turns elements on and off
- serves as timer circuit for error detection circuit
- helps communication between master and slave

Q121, Q122 (gate array)

- controls communication with composite power supply PCB

Q123 (LCDC)

- controls LCD on control panel

Q120 (IPC)

- controls communication with DF, sorter, and cassette feeding unit

**Composite Power Supply PCB**

Microprocessors

Q401 (CPU)

- controls high voltage
- controls scanning lamp
- controls DC power supply
- controls communication with DC controller PCB


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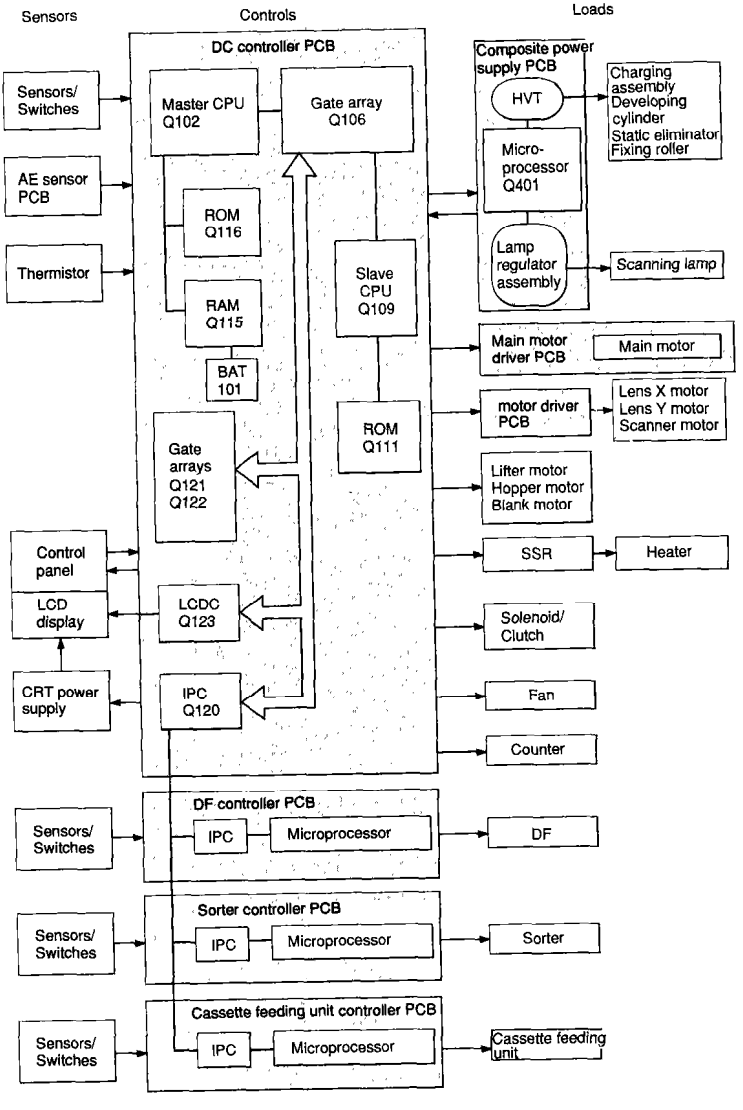


**Figure 3-102**

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# C. Inputs to DC Controller

## 1. Inputs to DC Controller (1/4)

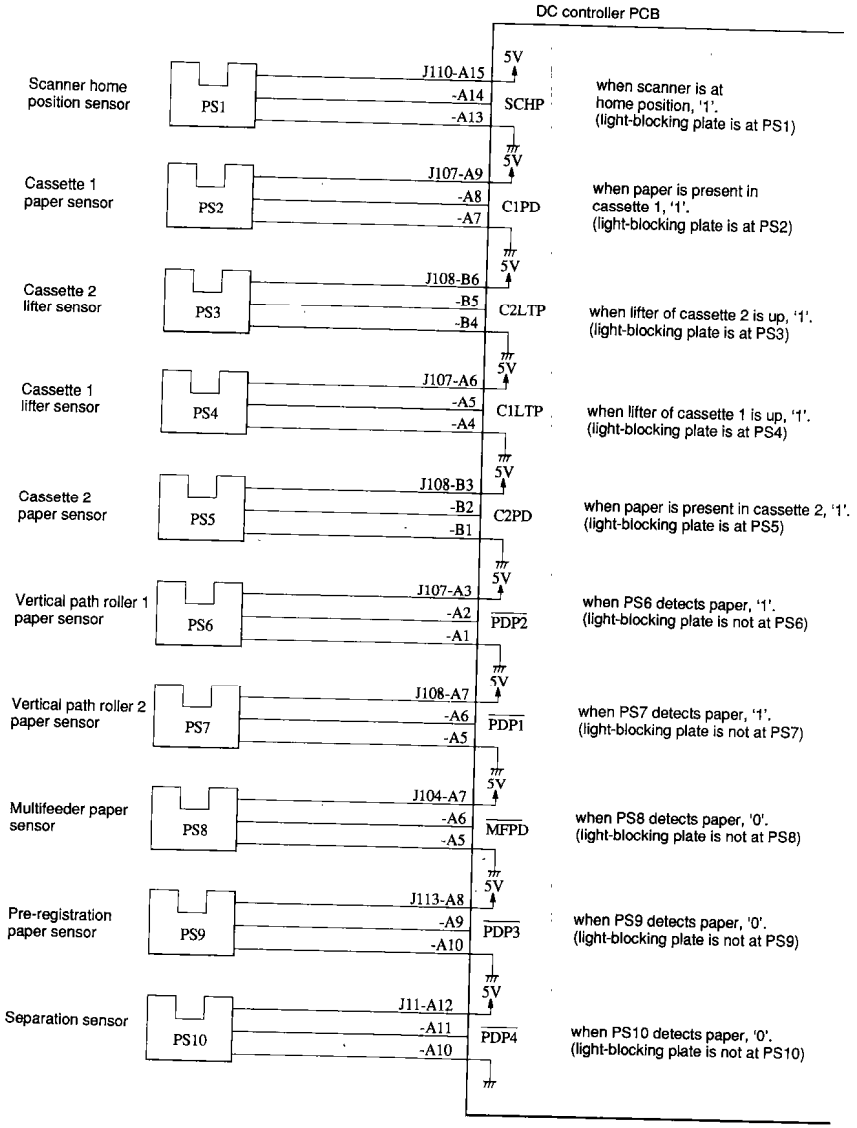


**Figure 3-103**



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## 2. Inputs to DC Controller (2/4)

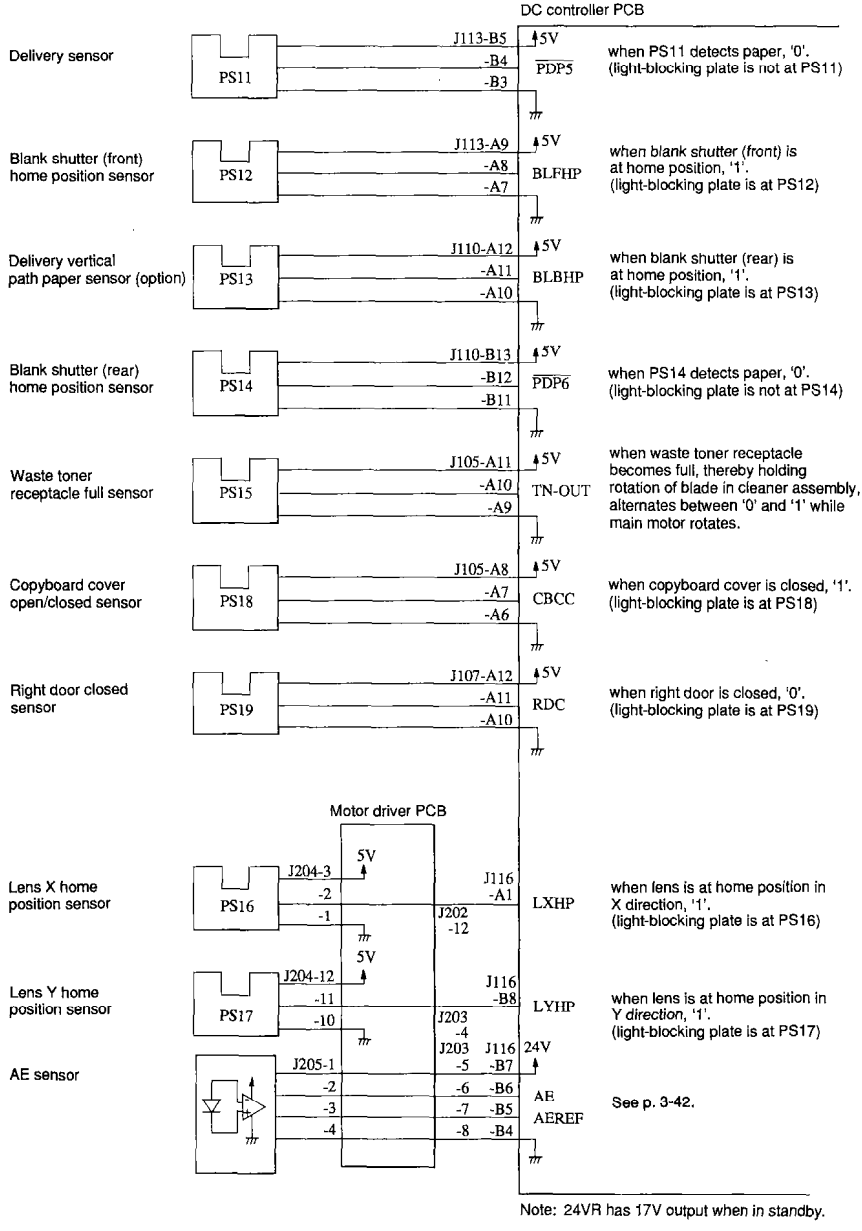


**Figure 3-104**

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## 3. Inputs to DC Controller (3/4)

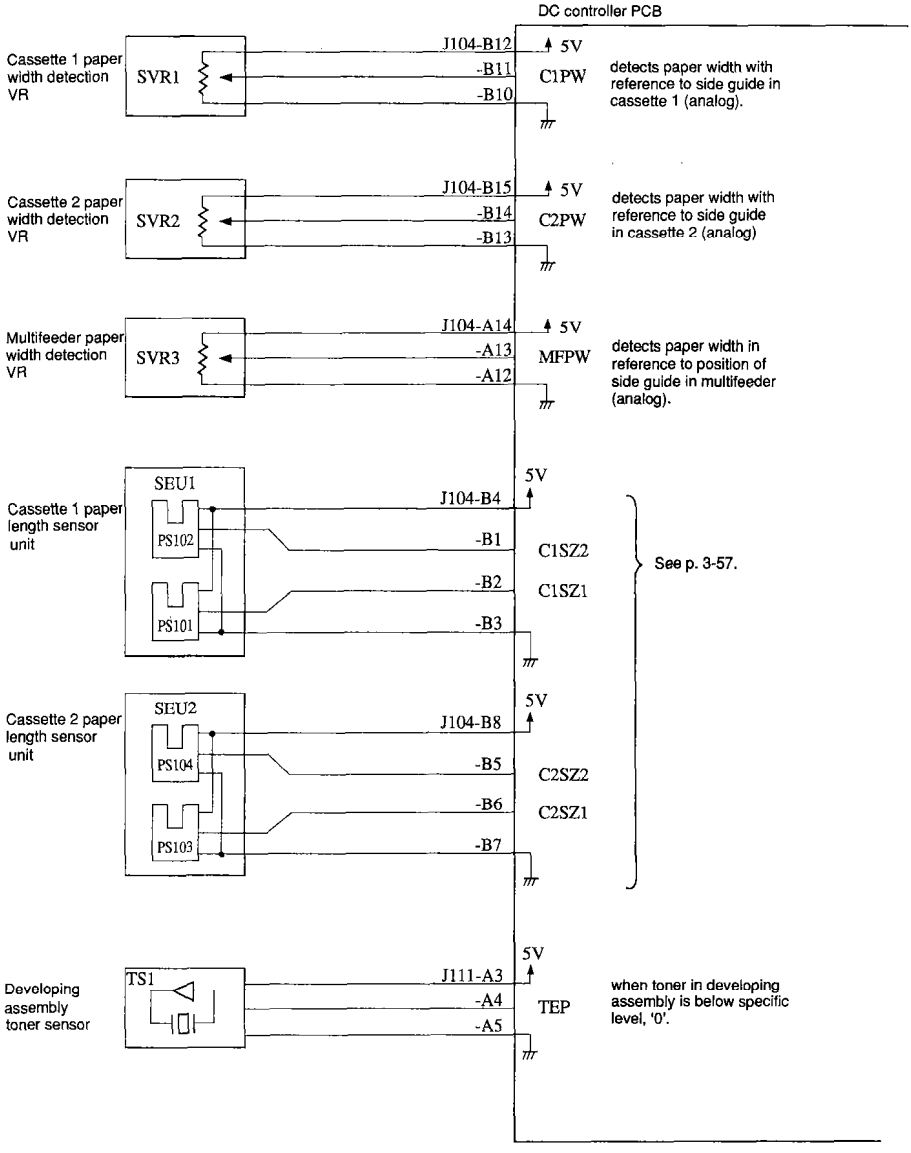


**Figure 3-105**


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## 4. Inputs to DC Controller (4/4)

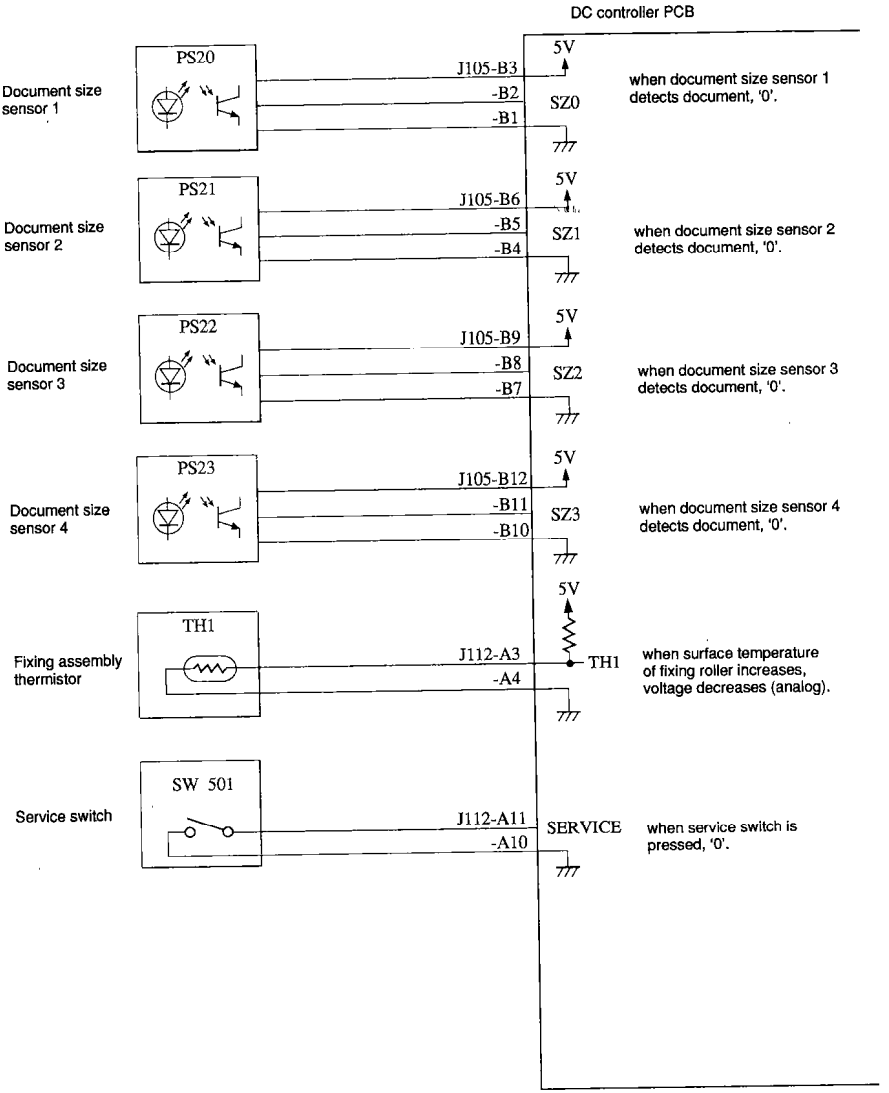


**Figure 3-106**

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# D. Outputs from DC Controller

## 1. Outputs from DC Controller (1/4)

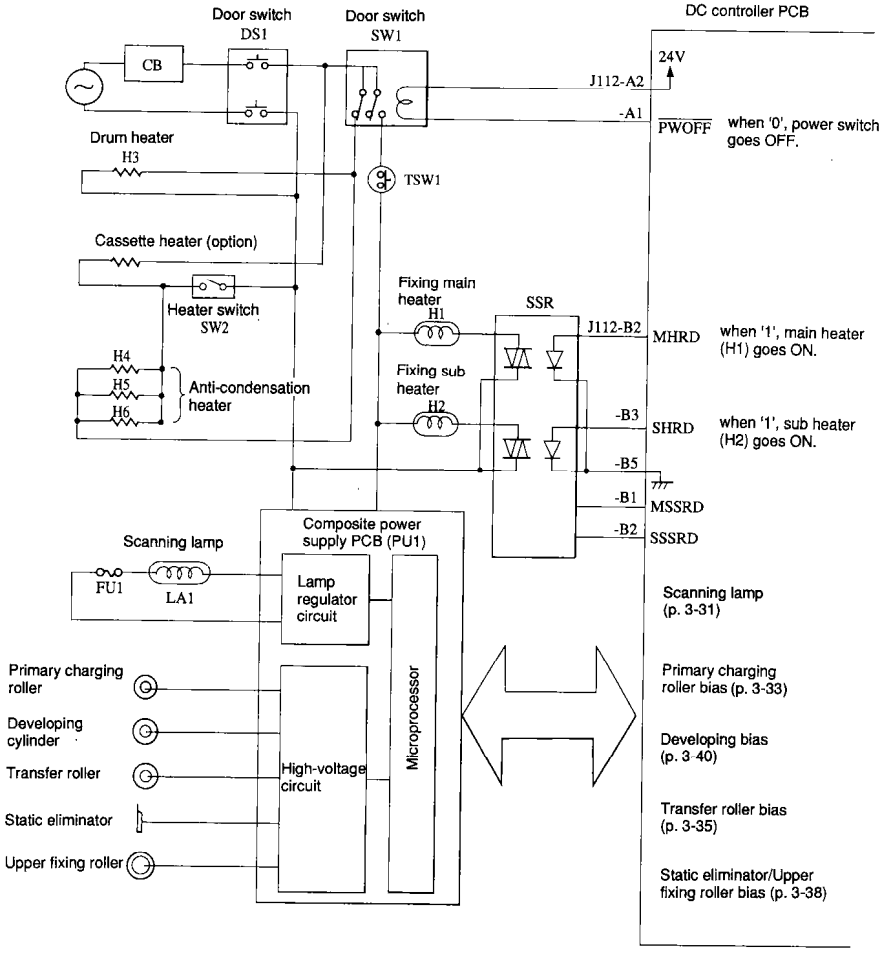


**Figure 3-107**


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## 2. Outputs from DC Controller (2/4)

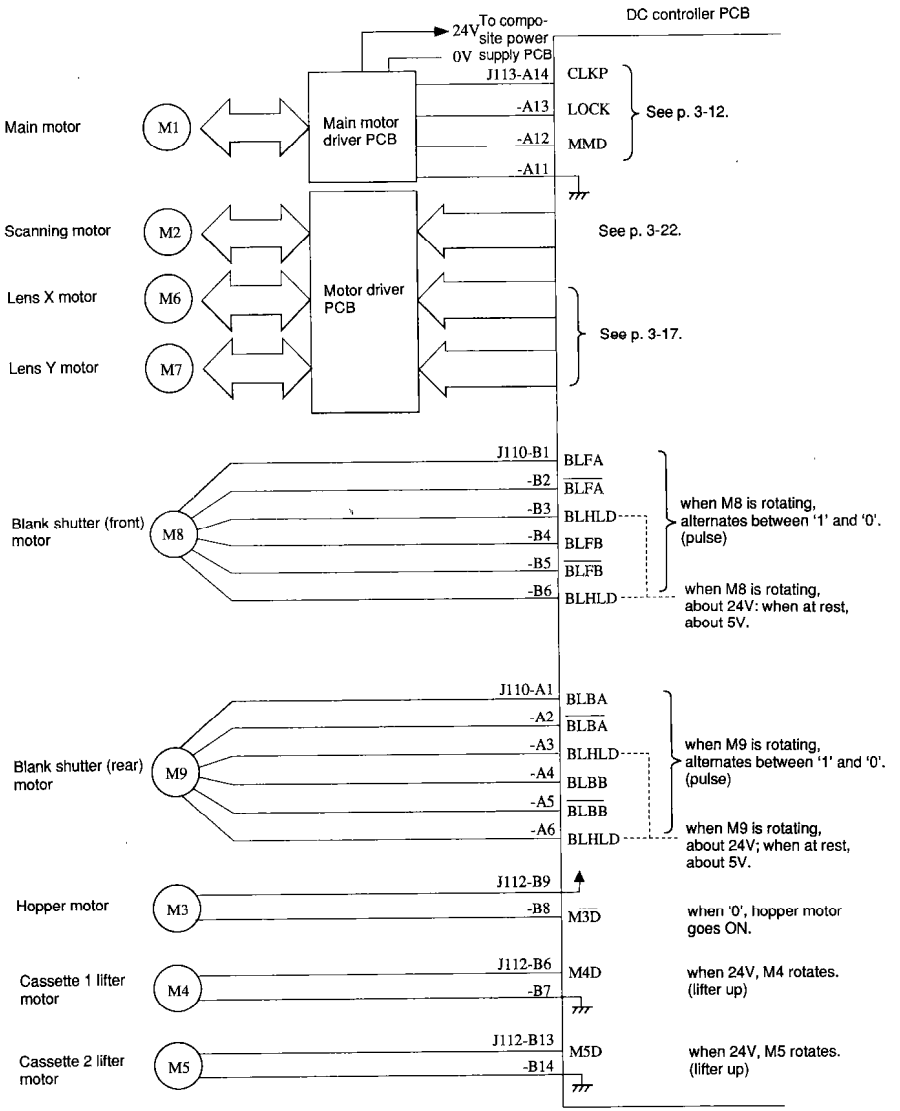


**Figure 3-108**

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## 3. Outputs from DC Controller (3/4)

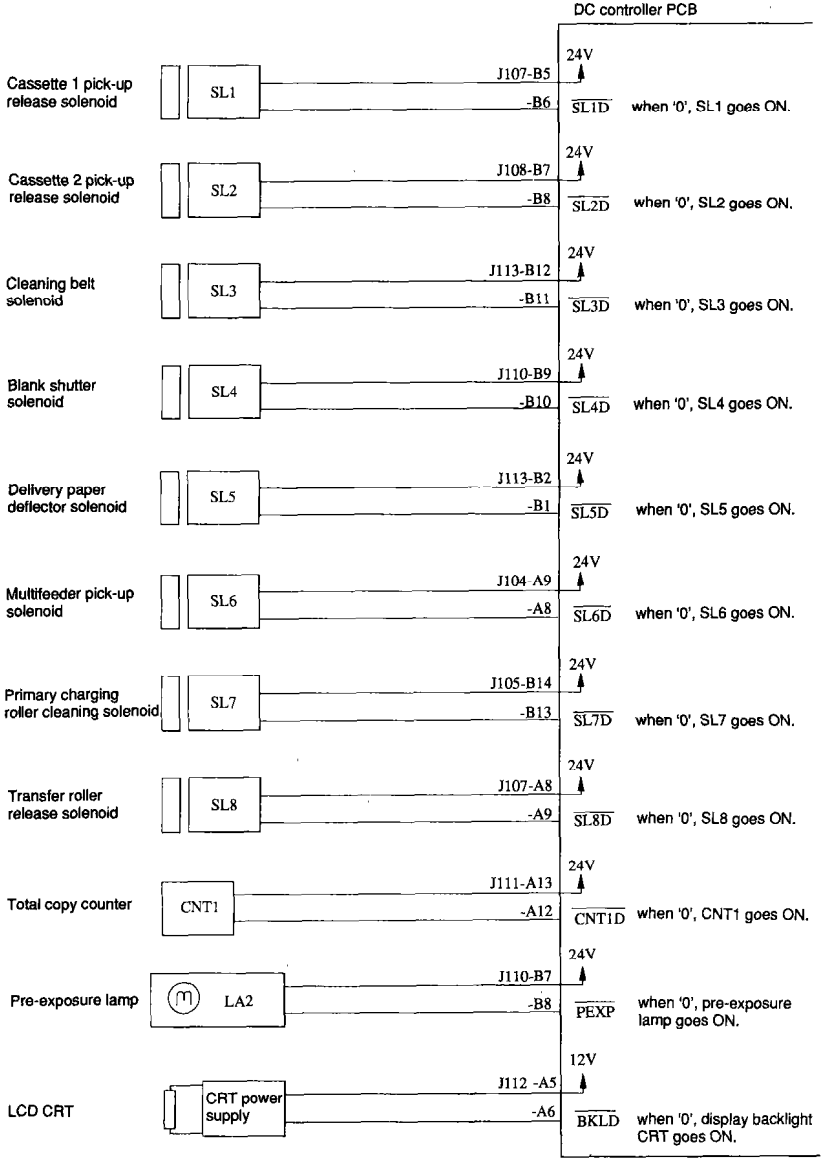


**Figure 3-109**


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## 4. Outputs from DC Controller (4/4)

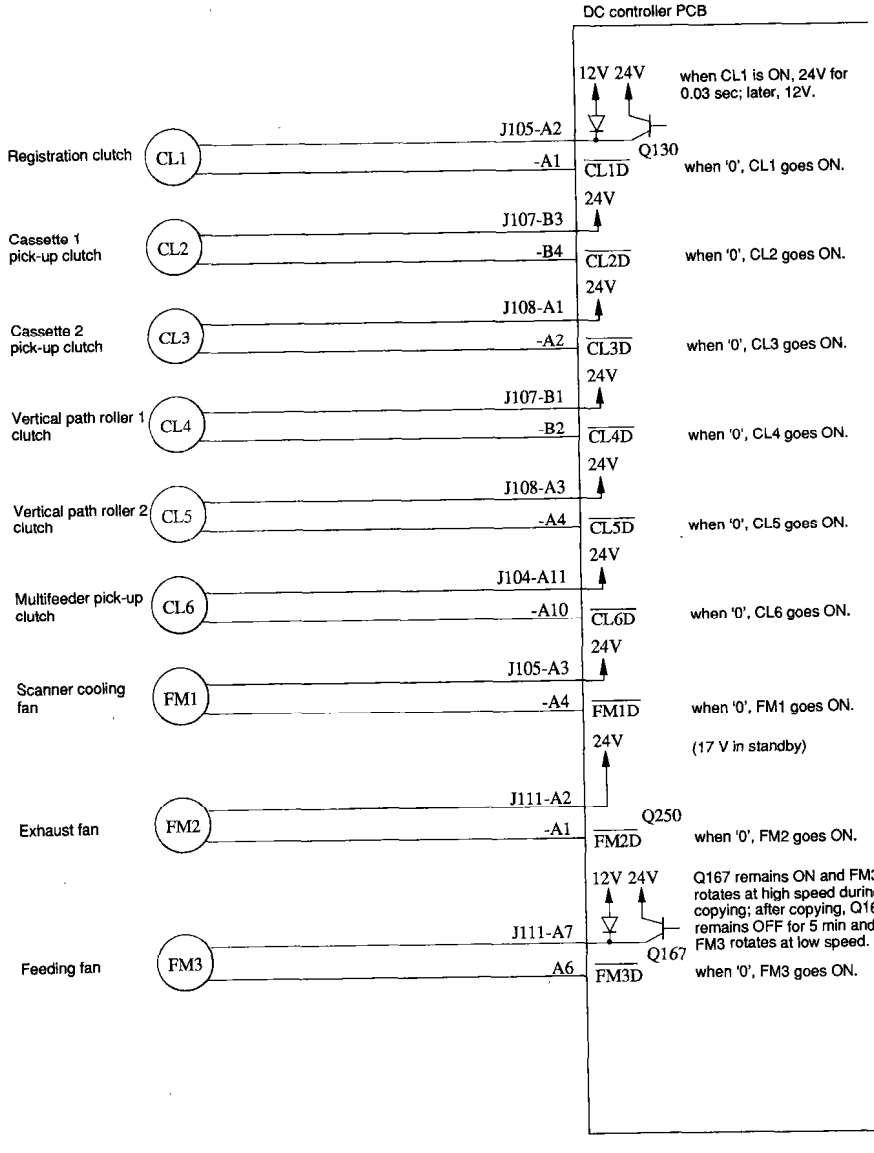


**Figure 3-110**

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# E. Controlling the Main Motor

## 1. Outline

Figure 3-111 shows the circuit that controls the main motor (M1), and the circuit has the following functions:

① turns the main motor on and off.
② maintains the main motor speed constant.

The main motor is a DC motor with a built-in clock pulse generator. When the motor rotates, clock signals (MMCLK) corresponding to the revolution of the motor are generated. The speed control circuit maintains the revolution of the main motor constant by matching the phases of the frequencies of these clock pulses and the reference signals.

## 2. Mechanism

When the main motor drive signal (M1D) from the DC controller circuit goes '1', the drive circuit of the motor driver turns on; and the condition causes the main motor to rotate at a specific speed.

When the main motor is rotating at a specific speed, the motor driver PCB sends the constant state signal (LOCK = 1) to the DC controller PCB. The LOCK signal goes '0' if the revolution of the main motor suffers a discrepancy for some reason.

If the LOCK signal remains '0' for about 2 sec, the DC controller identifies the condition as an error in the main motor, and stops the main motor while indicating 'E010' on the display.

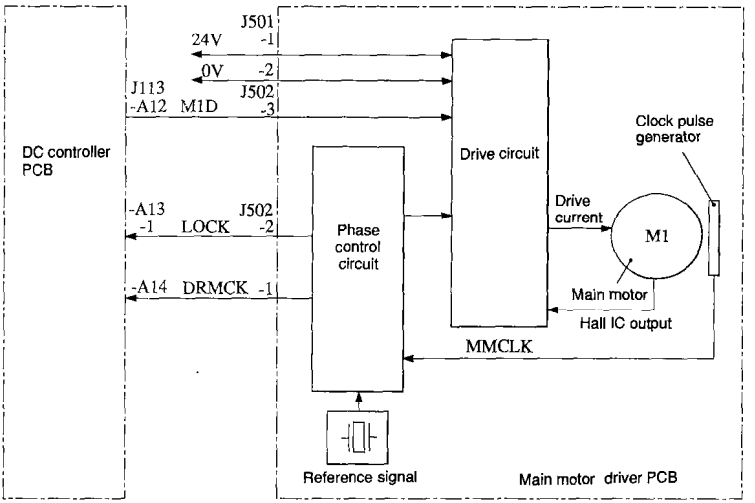


Figure 3-111


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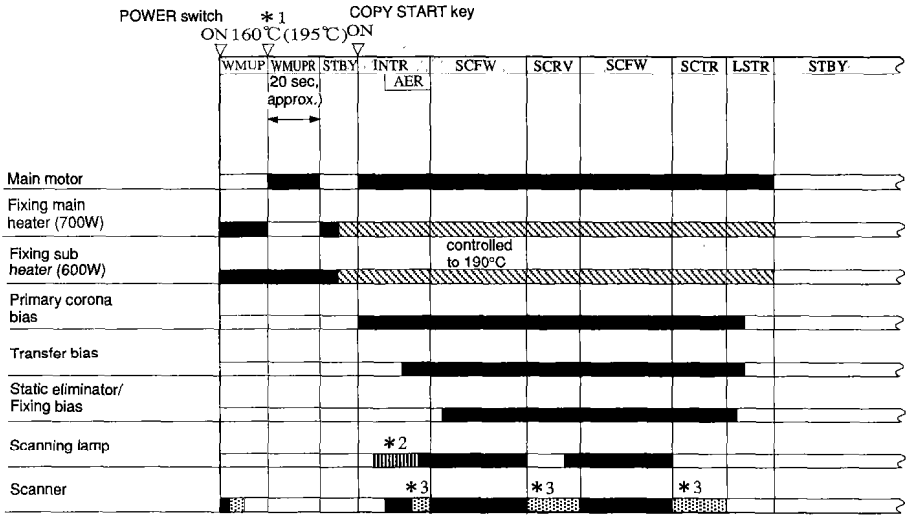
# F. Basic Sequence of Operations




*1 Surface temperature of fixing roller.
*2 ON only in AE mode.
*3 Scanner reverse.

**Figure 3-112**

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| | Period | Description | Remarks |
|---|---|---|---|
| WMUP (warm-up) | From when the copier is switched on until the temperature of the fixing roller reaches 160°C. | Waits for the fixing roller to warm up. | The warm-up time varies depending on the temperature of the fixing roller. |
| WMUPR (warm-up rotation) | About 2 sec after the temperature of the fixing roller has reached 160°C. (However, about 20 sec if the room temperature is 10°C or less.) | Evens out the temperature of the fixing roller. | After WMUPR, the indication on the display changes from 'auto start available' to the standard modes. |
| INTR (initial rotation) | For at least 1.5 sec after the COPY START key is pressed. | Stabilizes the sensitivity of the drum in preparation for copying operation. | |
| AER (AE rotation) | Until the scanner returns to the home position after having moved about 90 mm. | Moves the scanner forward/in reverse about 90 mm to measure the density of the document. | Control is executed only in the AE mode. |
| SCFW (scanner forward) | While the scanner is moving forward.<br>• The forward travel distance varies depending on the selected size of the paper and the reproduction ratio.<br>• The forward travel speed varies depending on the selected reproduction ratio. | Illuminates the document by the scanning lamp, and the reflected optical image is directed to the photosensitive drum through the mirror and the lens. | |
| SCRV (scanner reverse) | While the scanner is moving in reverse. | Returns the scanner to the home position in preparation for the next copying cycle. | The registration signal is generated to move the copy paper to the transfer assembly. |
| LSTR (last rotation) | From the end of SCRV until the copy paper moves past the delivery sensor. | Clean the surface of the photosensitive drum statically. | Discharges the last copy paper. |
| STBY (standby) | From the end of LSTR until the COPY START key is pressed or the copier is switched off. | Waits for a press on the COPY START key or other operation keys. | • In 2 min after the end of LSTR, the display changes to indicate the standard modes.<br>• If auto start is selected, i.e., if a document is placed and the COPY START key is pressed during WMUP, the copier starts making copies after WMUP. |

**Table 3-101**


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# II. EXPOSURE SYSTEM

## A. Changing the Reproduction Ratios

The reproduction ratio across the photosensitive drum is varied by the lens drive system and that around the drum, by the scanner drive system.

A zoom lens is used in the lens drive system, and the reproduction ratio across the photosensitive drum is varied by changing the position and the focal distance of the lens as shown in Figure 3-201.

The scanner drive system drives the No. 1 mirror faster (reduction) or slower (enlargement) than the rotation of the photosensitive drum (peripheral speed) to vary the reproduction ratio around the drum.

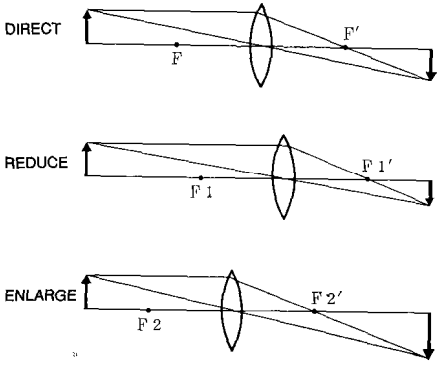


**Figure 3-201**

## B. Lens Drive System

### 1. *Outline*

Figure 3-202 shows how copy paper is picked up and fed in conventional copiers; Figure 3-203, on the other hand, shows how copy paper is picked up and fed in the copier.

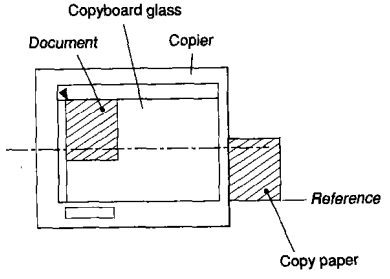


**Figure 3-202 (conventional copier; top view)**

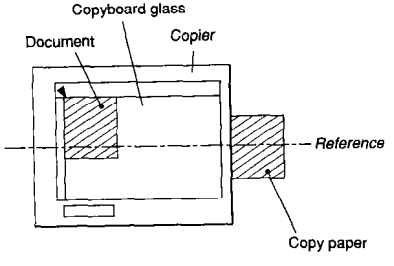


**Figure 3-203 (NP6030; top view)**

In conventional copiers, copy paper is picked up and fed with reference to the front side of the machines, and this arrangement is called *front reference*.

The NP6030, on the other hand, uses an arrangement called *center reference*, in which copy paper is picked up and fed with reference to the center of its feeding path.

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## 2. Moving the Lens

The copier picks up and feeds copy paper by center reference, and you will set documents on its copyboard along its rear end. For this reason, the lens is moved in Y (vertical) direction even in DIRECT mode if the width of the copy paper is different from the width of the document.

Using the Copyboard

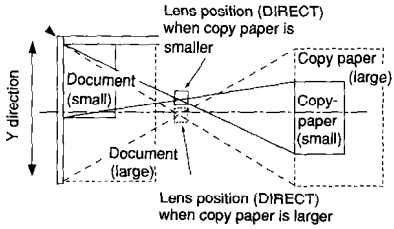


**Figure 3-204 (top view)**

The RF and ADF pick up and feed documents by center reference; therefore, the lens is not moved in Y (vertical) direction in DIRECT mode as long as the copy size is the same as the document size; see Figure 3-205. In non-DIRECT mode or if the copy size and the document size are different, the lens is moved in Y (vertical) direction to ensure that the image to be placed on the copy paper is handled in the same way as it is handled when the copyboard is used.

Using the RF or ADF

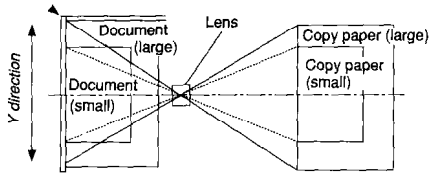


**Figure 3-205 (top view)**


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## 3. Moving the Lens

a. Moving the Lens in Y (vertical) Direction
The copier's lens is attached to the lens base. The mount is moved in Y (vertical) direction by rotating the lens Y motor (M7).

b. Moving the Lens in X (horizontal) Direction
The lens is moved in X (horizontal) direction by rotating the lens X motor (M6) attached to the back of the lens base.

## 4. Lens Motor Control Circuit

The lens X motor (M6) and the lens Y motor (M7) are 2-phase stepping motors. Since both motors are controlled in the same way, the explanations that follow will be limited to the lens X motor.

The DC motor controls the motors by generating two motor drive pulse signals ($\overline{LEXA}$, $\overline{LEXB}$). The direction of rotation of the lens X motor (M6) is switched by changing the timing at which the motor drive signals ($\overline{LEXA}$, $\overline{LEXB}$) are generated.

To hold the lens X motor still, the lens X motor hold signal (LEXHLD) is generated to apply a lower voltage to the motor by way of applying brakes.

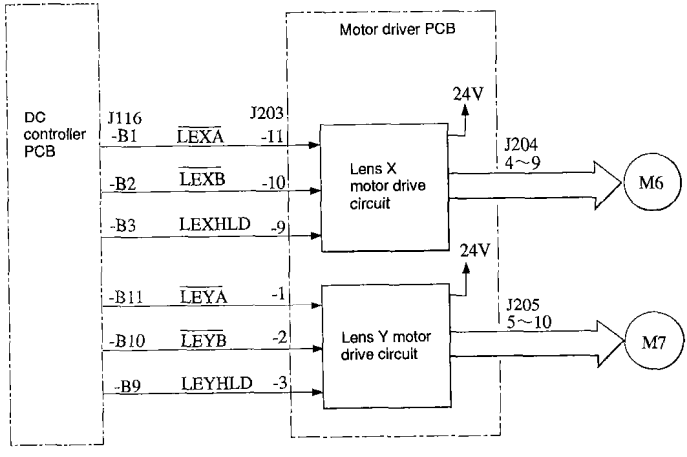


**Figure 3-206**

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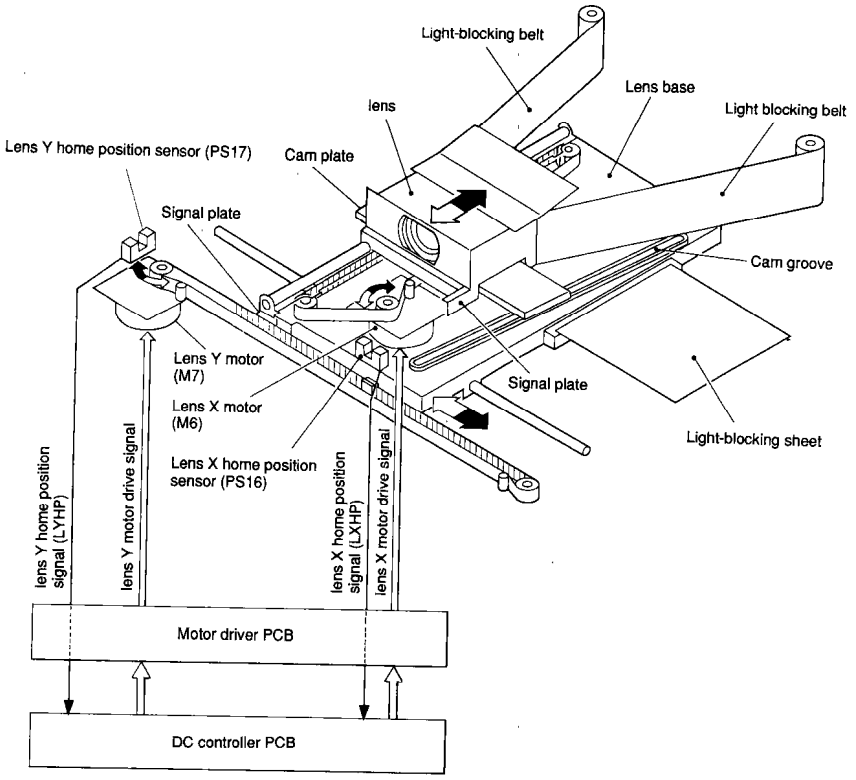


**Figure 3-207**


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## 5. Moving the Lens

**• At Power-On**

When the copier is switched on, the lens x motor (M6) starts to rotate to move the lens in the direction of the lens X home position sensor (PS16). Then, the lens Y motor (M7) starts to rotate to move the lens Y in the direction of the lens Y home position sensor (PS17). When the signal plate attached to the lens housing blocks the lens X home position sensor (PS16), the X motor starts to rotate in reverse; when the signal plate attached to the lens base blocks the lens Y home position sensor (PS17), the lens Y motor (M7) starts to rotate in reverse.

Both motors stop when the lens is positioned for DIRECT mode and A4 copy width; see I of Figure 3-208.

**• During Copying Operation**

The microprocessor slave (Q109) remembers the lens DIRECT position and the A4 copy width position. If a non-DIRECT ratio is selected, the microprocessor immediately sends drive pulses to the X motor (M6)/Y motor (M7) to change the position of the lens; see II in Figure 3-208. The lens Y motor (M7) starts to move after the document size and the copy size have been identified following a press on the COPY START key; see III in Figure 3-208.

**• Sequence of Lens Movement**

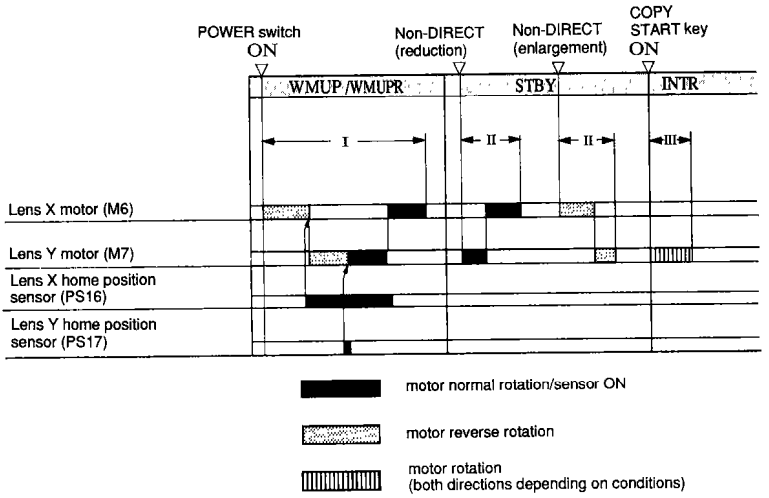


**Figure 3-208**

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## 6. Focusing

The copier's zoom lens unit consists of multiple lenses, and the lenses are focused on images by the cam plate attached inside the zoom lens unit.

The cam plate moves along the cam groove in the lens base to change the intervals between the multiple lenses for correct focusing.

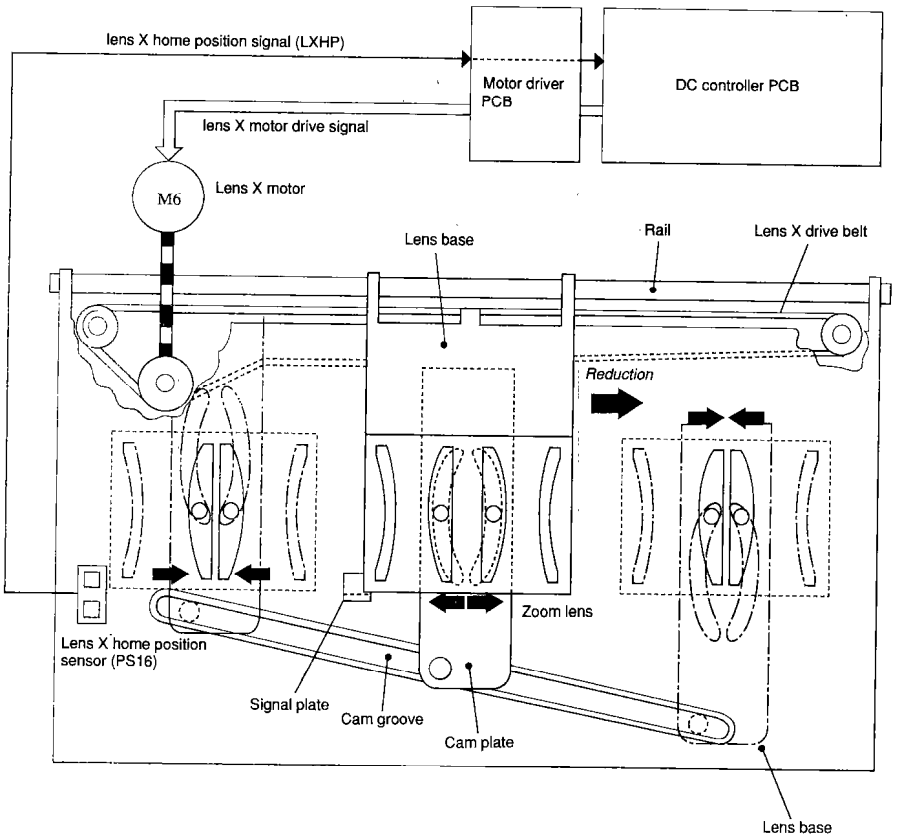


**Figure 3-209**


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# C. Scanner Drive System

## 1. Outline

The scanner system is driven by the scanner motor (M2). The scanner motor changes its direction of rotation to move the scanner forward and in reverse. When the scanner is moving forward, the revolution of the motor changes continuously to suit the selected reproduction ratio; however, when the scanner is moving in reverse, the revolution of the motor is constant regardless of the selected reproduction ratio — about three times as high as when the scanner is moving forward.

The distance over which the scanner moves varies depending on the length of the copy paper and the selected reproduction ratio.

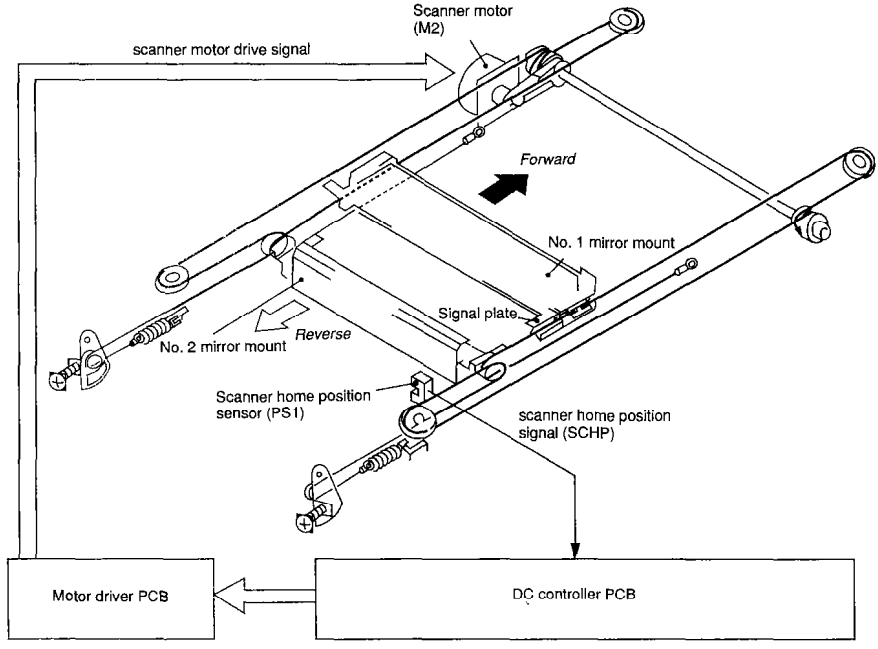


Figure 3-210

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## 2. Scanner Motor Control Circuit

The scanner motor (M2) is a 5-phase stepping motor, and is controlled by the 5-phase 10 motor drive signals (SCT1 through SCT10) generated by the DC controlled. The direction and speed of the scanner motor (M2) are controller by changing the timing at which these 10 motor drive signals (SCT1 through SCT10) are generated.

The motor is kept still by the scanner motor hold signal (SCMHLD), which generates a lower voltage used to apply brakes to the motor.

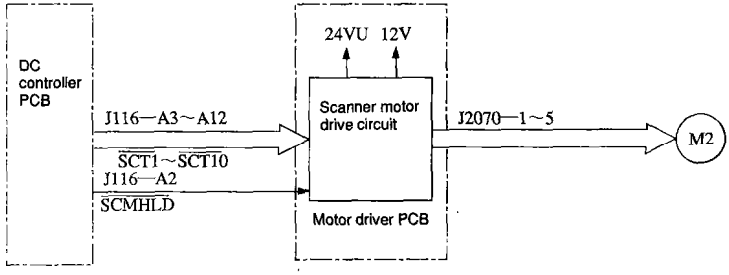


**Figure 3-211**


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## 3. Relationship between Scanner Sensor and Signals

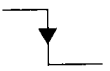
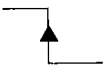
| Scanner sensor | Signal | Scanner | | Description |
|---|---|---|---|---|
| | | Forward | Reverse | |
| Scanner home position | SCHP |  | | • registration clutch on |
| | | |  | • 0.1 sec later, scanner stops moving in reverse |

**Table 3-201**

## 4. Basic Sequence of Scanner Movement (non-DIRECT)

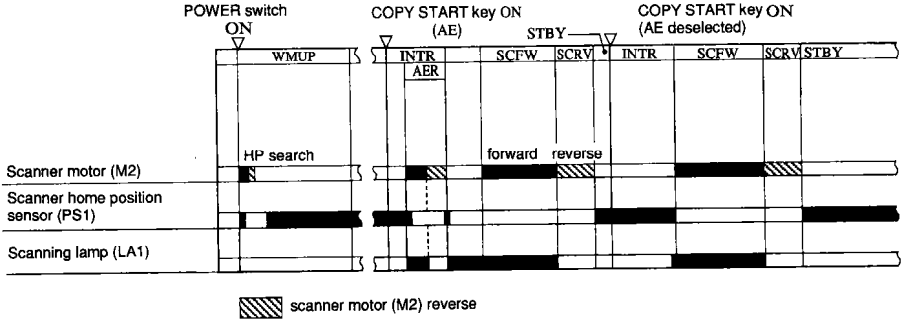



**Figure 3-212**

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## 5. Sequence of Scanner Movement in Page Separation Mode (2 copies)

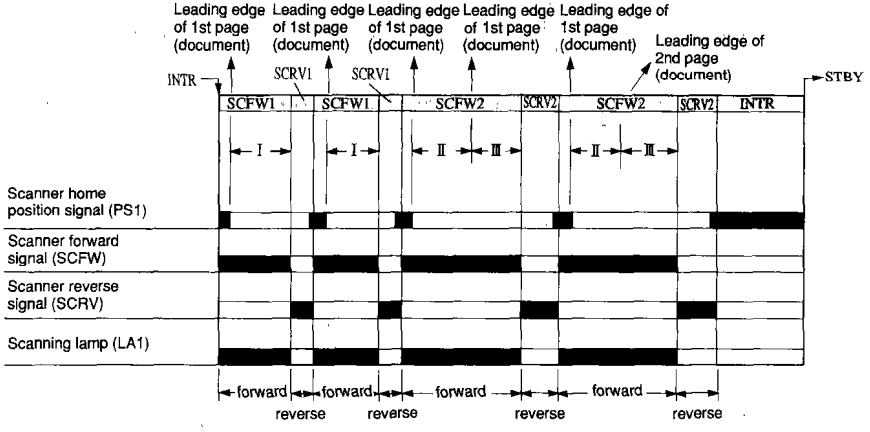


**Figure 3-213**

I, II, and III in Figure 3-213 are controlled with reference to the leading edge of the first document page (falling edge of PS1).

I: The distance over which the scanner moves from the leading edge of the document is determined by the reproduction ratio and the cassette size as in normal copying operation.

II: The period is similar to I; however, if the scanner must move forward more than 210 mm, the 210mm point will be identified as the leading edge of the second document page.
If the distance is less than 210 mm, the point at which the scanner reverses in I will be identified as the leading edge of the second document page.

III: Same as I.

**Reference:**

The (maximum) distance over which the scanner moves from the leading edge of a document* is 432 mm; the distance, further is also affected by the selected reproduction ratio.

When making 200% copies, the scanner moves as long as 216 mm.

*Point to be reached by the scanner after having moved 10 mm from the falling edge of PS1.

**Reference:**

If more than two modes are selected, the scanner is controlled based on the smallest document size identified.

If any of the following modes is selected, the scanner is controlled based on the document size.

| Mode | Reference document size |
|---|---|
| Feeder (RF, ADF) | document size identified by the feeder. |
| Document frame erasing | document size specified by the user. |

**Table 3-202**


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# D. Controlling the Identification of Document Size

## 1. Outline

The copier provides auto paper selection, auto ratio selection, reduce layout mode, and enlarge layout mode, and all these modes are dependent on the identification of document size.

The presence/absence of a document and its size, if any, are identified by the four document size sensors shown in Figure 3-214; when the copyboard cover is brought down, the presence of a document is checked by each of the sensors, and the size is identified as one of the default sizes — A3, B4, A4, or B5.

Each document size sensor consists of a LED and a phototransistor; the LED emits light against the document, and the reflected light is detected by the phototransistor for output to the DC controller circuit.

The size of documents picked up from the DF (option) is checked by the DF itself, and the data is sent to the copier. When the DF is used, the copier executes auto paper selection, auto ratio selection, reduce layout, and enlarge layout modes based on the data sent from the DF.

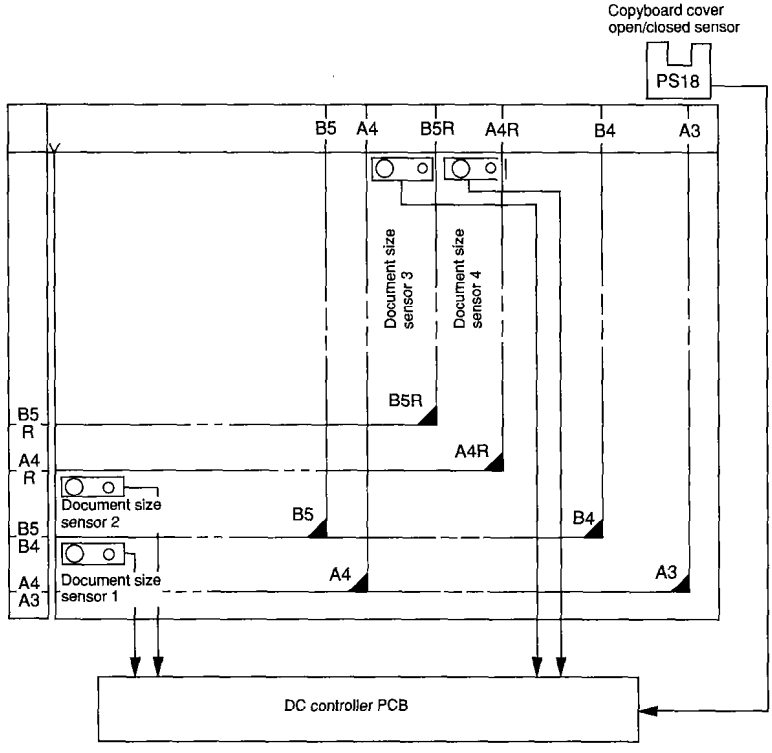


Figure 3-214

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## 2. Mechanism

When the copyboard cover is brought down to about 30° or less, i.e., the light-blocking plate blocks PS18, the copyboard cover open/closed sensor (PS18) attached at the copier's rear goes ON.

The DC controller reads the output level of each size sensor at intervals of about 0.1 sec for 15 sec or until the COPY START key is pressed after PS18 has gone ON. If no change occurs in the output level, the DC controller PCB identifies the presence of a document at the respective sensor position, thereby identifying the document size (Table 3-203).

This way of identifying the size of documents enables identifying the size of even an extremely dark document.

The sensor output level, however, does not change for the following:

a. A3 dark document
b. book document (changes are difficult to detect because of the thickness)

**Reference:**

The copier could wrongly identify the size of documents a and b above.

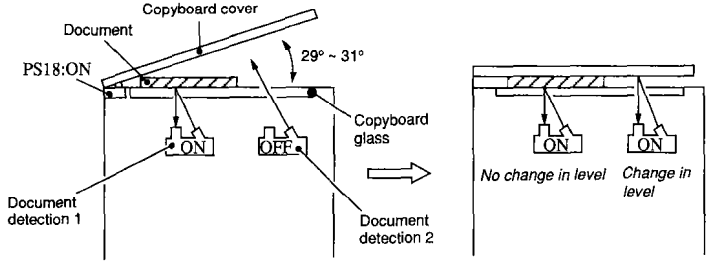


**Figure 3-215**


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### 3. Identifying the Document Size

The DC controller PCB identifies the different sizes of documents based on the outputs of the document sensors; see Table 3-203.

No: the sensor outputs occurring when the copyboard cover is brought down between 15° and 30° and 15 sec thereafter are the same, i.e., a document is identified.

Yes: the sensor output occurring when the copyboard cover is brought down between 15° and 30° and when the copyboard cover is completely in contact with the copyboard are different, i.e., no document is identified.

| Size | Document size sensor | | | |
|---|---|---|---|---|
| | 1 | 2 | 3 | 4 |
| A3 | No | No | No | No |
| B4 | Yes | No | No | No |
| A4R | Yes | Yes | No | No |
| A4 | No | No | Yes | Yes |
| B5 | Yes | No | Yes | Yes |
| B5R | Yes | Yes | No | Yes |
| XX | Yes | Yes | Yes | Yes |

**Table 3-203 (A/B Documents)**

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## 4. Identifying the Size of Documents by the DF

### a. Outline

The DF (option) identifies the sizes of documents as follows in response to a command from the copier.

① If all the cassettes are of the AB type, the copier instructs the DF to identify AB sizes.

② If all the cassettes are of the INCH type, the copier instructs the DF to identify INCH sizes.

If the document and the copy paper are of different size types, however, the copies may not carry all the image of the document.

In addition, the DF used for the copier sets document on the copyboard glass by center reference; therefore, different sides will miss images in book mode.

Example 1
A4 document, LTR sheet

• Book mode • DF mode

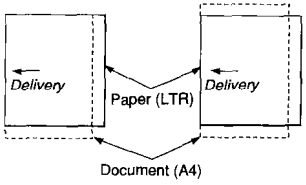


**Figure 3-216**

• In the case of an A4 document and a LTR copy, the copies may not show the bottom of the document in book mode and both bottom and top of the document in DF mode.

Example 2
A4 document, LTR sheet (enlargement, DF mode)

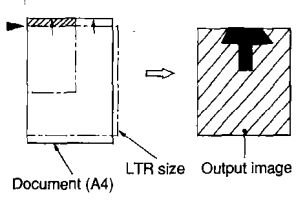


**Figure 3-217**

• Since the document is identified as LTR and enlargement is with reference to the point indicated by ▶, the shaded area will not show on the copies.

Example 3
LTR document, A4 copy (enlargement, DF mode)

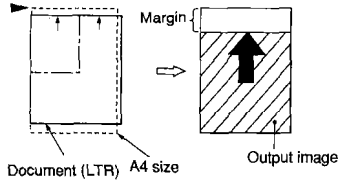


**Figure 3-218**

• Since the document is identified as A4 and enlargement is with reference to the point indicated by ▶, the margin at the top of the copies increases.


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# III. IMAGE FORMATION SYSTEM

## A. Outline

Figure 3-301 is a diagram of the copier's image formation system, which has the following functions:

- controls the scanning lamp
- controls the primary charging roller bias
- controls the transfer roller bias
- controls the static eliminator/fixing roller bias
- controls the developing bias
- controls the blank exposure lamp

The copier has a microprocessor (Q401) on its composite power supply PCB to perform the foregoing controls.

The microprocessor master (Q102) on the DC controller PCB and the microprocessor (Q401) on the composite power supply PCB exchange data using an 8-bit data line, 3-bit command line, and 2-bit communication check line.

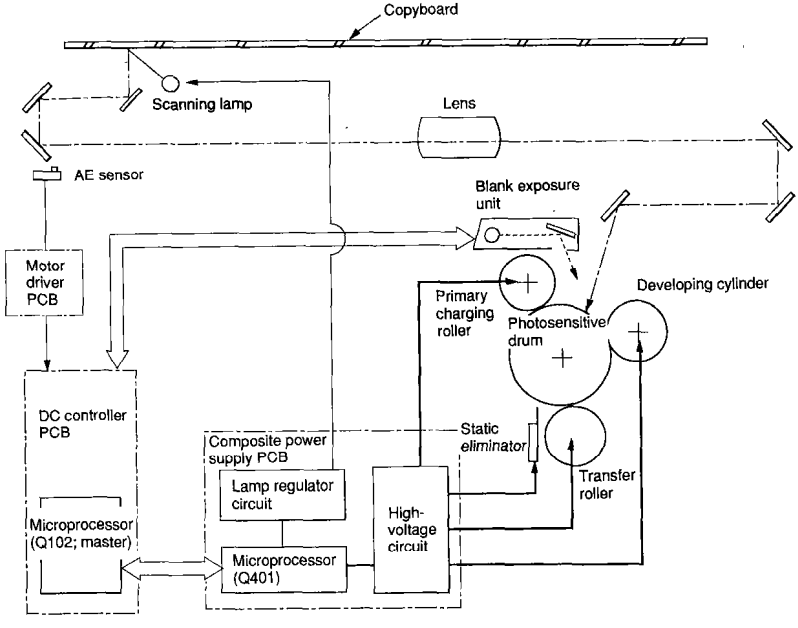


**Figure 3-301**

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# B. Sequence of Image Formation System Operations

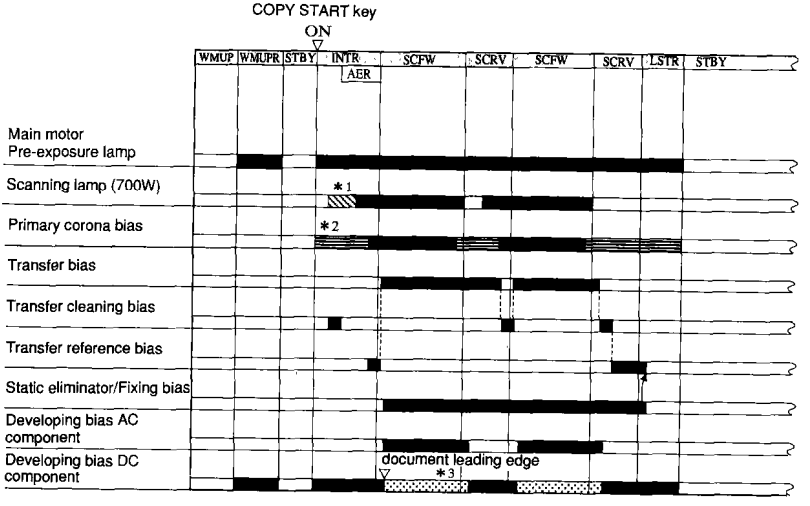


**Figure 3-302**

*1: ON in AE mode only.
*2: Primary corona output corresponding to the transfer cleaning bias; see p. 3-34.
*3: Varies depending on the setting of the COPY DENSITY key and the AE sensor output.


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# C. Controlling the Scanning Lamp Intensity

## 1. Outline

Figure 3-303 shows the circuit that controls the intensity of the scanning lamp, and the circuit has the following functions:

- turns on and off the scanning lamp.
- checks if the scanning lamp is on or off.
- controls the intensity of the scanning lamp.

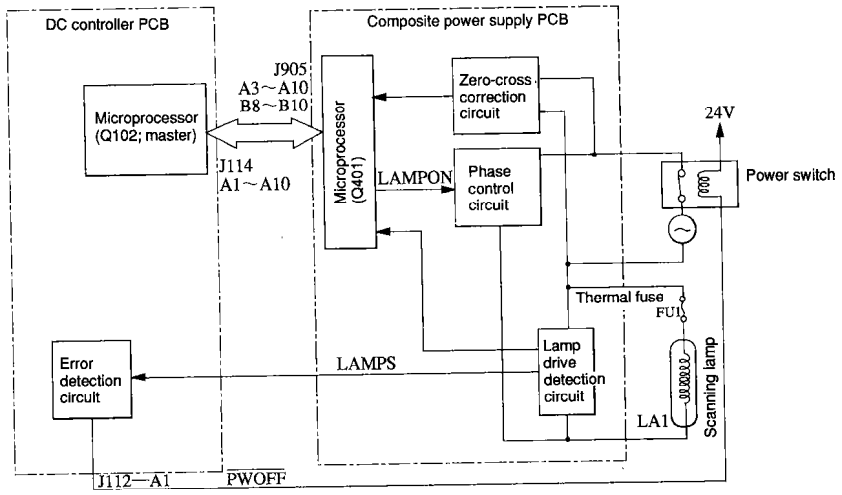


**Figure 3-303**

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## 2. Turning On and Off the Scanning Lamp and Controlling the Light Intensity

The microprocessor master (Q102) on the DC controller PCB causes the microprocessor (Q401) on the compound power supply PCB to generate the LAMPON signal (pulse), thereby turning on the scanning lamp.

The intensity of the scanning lamp is varied between 58 and 75 V by changing the timing at which the LAMPON signal is generated.

- Scanning Lamp Drive Voltage at 75 V

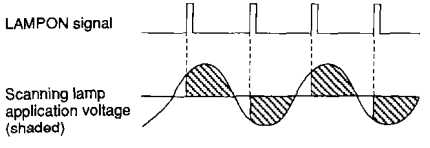


**Figure 3-304**

- Scanning Lamp Drive Voltage at 58 V

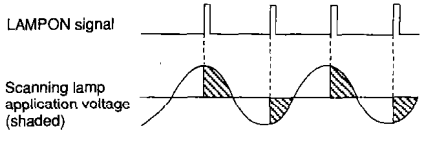


**Figure 3-305**

## 3. Detecting the Activation of the Scanning Lamp

When the scanning lamp (LA1) is on, the lamp drive detection circuit remains on to send the LAMPS signal to the error detection circuit on the DC controller.

The DC controller PCB uses the LAMPS signal to check the condition of the scanning lamp; if it identifies an error, it indicates 'E220' on the display or executes error auto power-off.

## 4. Automatic Control of Scanning Lamp Intensity (ALVC)

To correct changes in the copy quality caused by deterioration or wear of the photosensitive drum, the copier automatically corrects the drive voltage for the scanning lamp (ALVC control).

## 5. Protection Mechanism

The copier is equipped with a thermal fuse to prevent malfunction of the scanning lamp.

If a short circuit or some factor causes overheating around the scanning lamp (about 104°C or more), the thermal fuse (FU1) blows to cut the supply power to the scanning lamp.


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# D. Controlling the Primary Charging Roller Bias

## 1. Outline

Figure 3-306 shows the circuit that controls the application voltage for the primary charging roller, and the circuit has the following functions:

- turns on and off the primary charging roller bias.
- maintains the voltage of the primary roller bias.
- switches the application voltage for the primary roller bias.
- corrects the application voltage level for the primary charging roller bias and the scanning lamp drive voltage level.

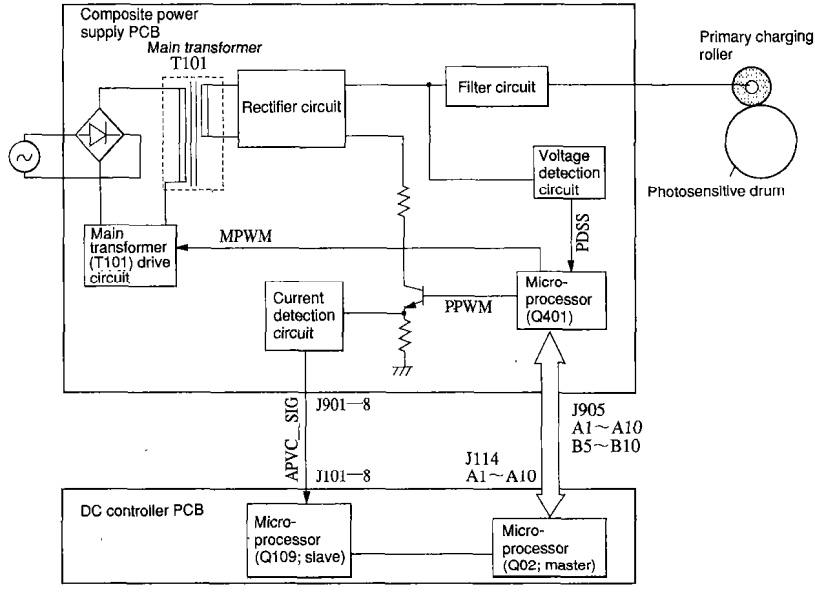


**Figure 3-306**

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## 2. Turning On and Off the Primary Roller Bias

Under the control of the microprocessor master (Q102) on the DC controller PCB, the microprocessor (Q401) on the composite power supply PCB generates the PPWM signal (pulse). The signal causes the secondary side of the main transformer (T101) to turn on, thereby generating a primary charging roller bias.

The main transformer (T101) is driven by the drive signal (MPWM) from the microprocessor (Q401). In addition to the foregoing functions, the main transformer is used to take care of the DC power supply and to serve as the transformer for other high-voltage loads.

## 3. Maintaining the Voltage of the Primary Charging Roller Bias

While a bias voltage is applied to the primary charging roller, the microprocessor (Q401) on the composite power supply PCB takes in the PDSS signal (analog) from the voltage detection circuit, and controls the PPWM signal so that the output voltage remains constant.

## 4. Switching the Primary Charging Roller Bias Application Voltage

The copier applies a cleaning bias to the transfer roller to clean the transfer roller during initial rotation (INTR) and while the roller is over the gap between two sheets of paper.

To ensure better cleaning by the cleaning bias and to prevent residual memory on the drum by the bias at the same time, a primary charging roller bias is applied during initial rotation and while the roller is over the gap between two sheets of paper.

## 5. Correcting the Application Voltage Level for the Primary Charging Roller Bias and the Scanning Lamp Drive Voltage Level

Changes in the static latent image cause changes in the copy images, and these changes are usually triggered by the following:

- change in the sensitivity of the drum
- change in the degree of charging by the primary charging roller

The above changes, in turn, are caused by changes in the site environment (temperature, humidity) or deterioration, wear, and dirt on related parts.

You may suspect the above when the copier's light area potential ($V_L$) and dark area potential ($V_D$) increases. To prevent the problem, the copier corrects the primary charging roller bias application voltage level (APVC control) and, at the same time, corrects the scanning lamp drive voltage level (ALVC control), thereby ensuring a constant light area voltage ($V_L$) and dark area voltage ($V_D$) at all times.

These correction mechanisms are started under the following conditions and timing:

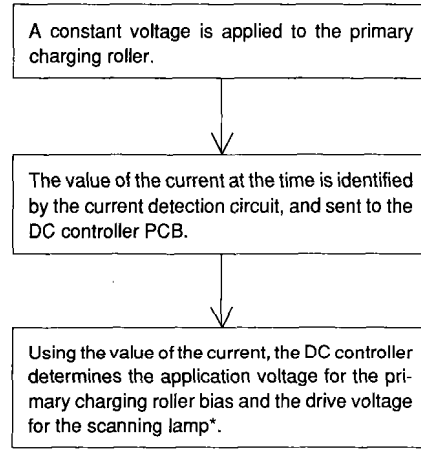
*Conditions*

- when the temperature of the fixing assembly is 100°C while the main switch is on.
- during APVC_MR (service mode, S4S).

*Timing*

- during WMUPR

*Flow*


A constant voltage is applied to the primary charging roller.
The value of the current at the time is identified by the current detection circuit, and sent to the DC controller PCB.
Using the value of the current, the DC controller determines the application voltage for the primary charging roller bias and the drive voltage for the scanning lamp*.

* The DC controller controls the voltages based on correction table for the drive voltage/application voltage and the return current it has stored in advance in its memory.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# E. Controlling the Transfer Roller Bias

## 1. Outline

The copier uses a direct charging method, in which charging rollers are used for transfer. Its bias control, therefore, is different from conventional machines which use corona charging for transfer.

The copier uses the following three types of transfer roller biases:

### 1) Transfer Bias

This bias is identical to the transfer bias used by conventional machines, and is a negative voltage (constant voltage, DC).

### 2) Cleaning Bias

In machines using a direct charging method, jams can cause the toner on the photosensitive drum to transfer and adhere to the transfer roller.

To eliminate such toner, the copier applies a positive voltage (constant voltage, DC), thereby returning the toner to the drum.

Cleaning Bias Output Timing

- during initial rotation after a press on the COPY START key
- during last rotation, as necessary
- during TRR_CL (service mode, S4S)

### 3) Reference Bias

Changes in the environment or deterioration of the transfer roller can change the resistance of the transfer roller and affect transfer efficiency.

To prevent changes in the copy image caused by changes in transfer efficiency, the copier corrects the application voltage level for the transfer bias.

The reference bias (constant current, DC) is applied to determine the correction value each time the COPY START key is pressed.

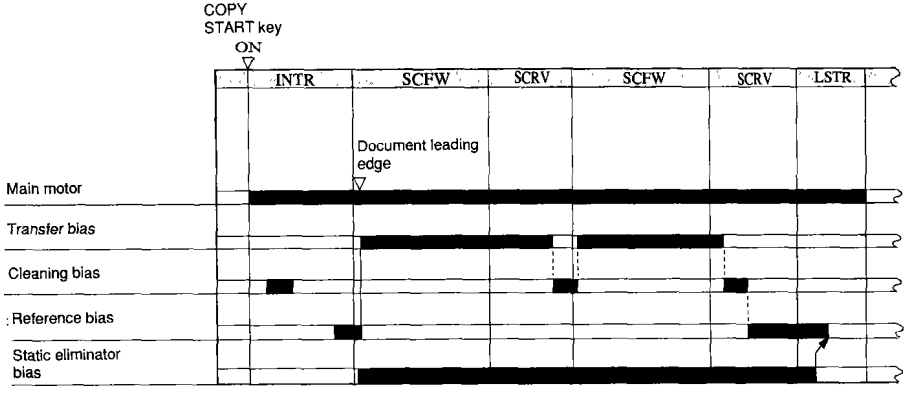


Figure 3-307

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Figure 3-308 shows the circuit used to control the foregoing three types of biases, and the circuit has the following functions:

- turns on and off the transfer roller bias.
- controls the bias constant voltage for transfer.
- corrects the bias voltage level for transfer.
- detects error in the transfer bias.

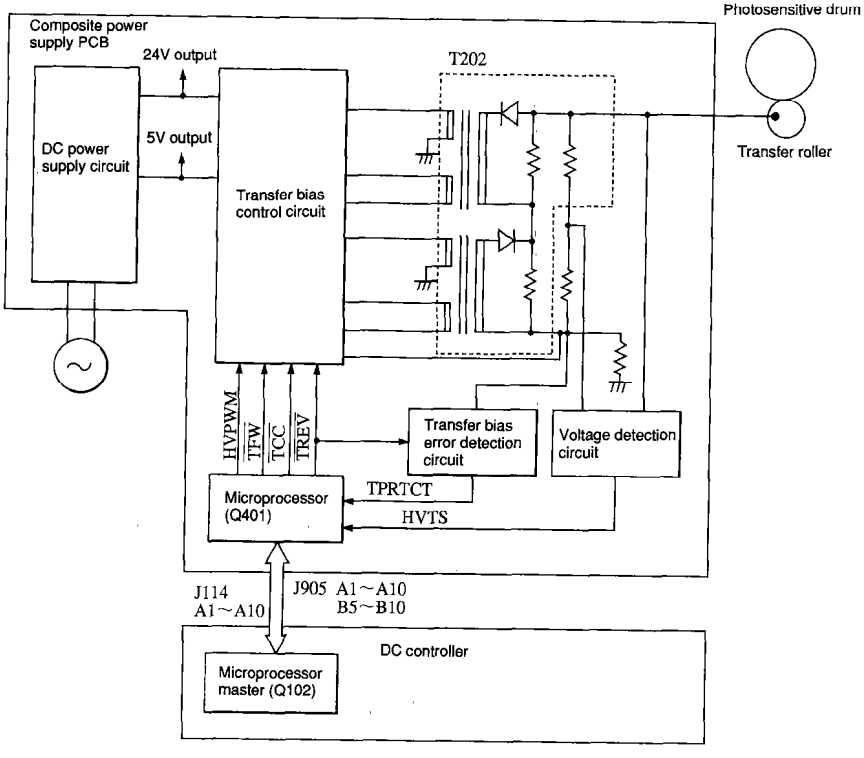


**Figure 3-308**


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## 2. Turning On and Off the Transfer Roller Bias

The microprocessor master (Q102) on the DC controller PCB controls the microprocessor (Q401) on the composite power supply PCB to send four signals to the transfer bias control circuit, and the combinations of these four signals are used to determine which bias should be applied.

| | HVPWM | $\overline{\text{TFW}}$ | $\overline{\text{TREV}}$ | $\overline{\text{TCC}}$ |
|---|---|---|---|---|
| Transfer bias | ON (pulse) | ON | OFF | OFF |
| Cleaning bias | OFF | OFF | ON | OFF |
| Reference bias | OFF | ON | OFF | ON |

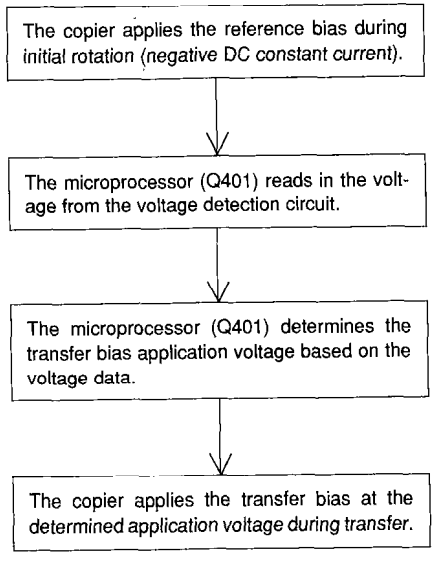
**Table 3-301**

## 3. Controlling the Transfer Bias Constant Voltage

The microprocessor (Q401) on the composite power supply PCB reads in the HVTS signal (analog) while the transfer bias output is generated, and controls the HVPWM signal so that the application voltage remains constant.

## 4. Correcting the Transfer Bias Voltage Level (ATVC control)

The copier automatically corrects the transfer bias application voltage level, thereby correcting changes in the transfer efficiency caused by changes in the environment or deterioration of the transfer roller (ATVC) control.


The copier applies the reference bias during initial rotation (negative DC constant current).
The microprocessor (Q401) reads in the voltage from the voltage detection circuit.
The microprocessor (Q401) determines the transfer bias application voltage based on the voltage data.
The copier applies the transfer bias at the determined application voltage during transfer.

The above control is executed once during the initial rotation period that is initiated after the COPY START key is pressed. For this reason, the application voltage never fluctuates during copying operation.

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# F. Controlling the Static Eliminator Bias and Fixing Bias

## 1. Outline

Figure 3-309 shows the circuit that controls the static eliminator and the fixing bias, and the circuit has the following functions:

- turns on and off the static eliminator bias and the fixing bias.
- switches the voltage for the static eliminator bias and the fixing bias.

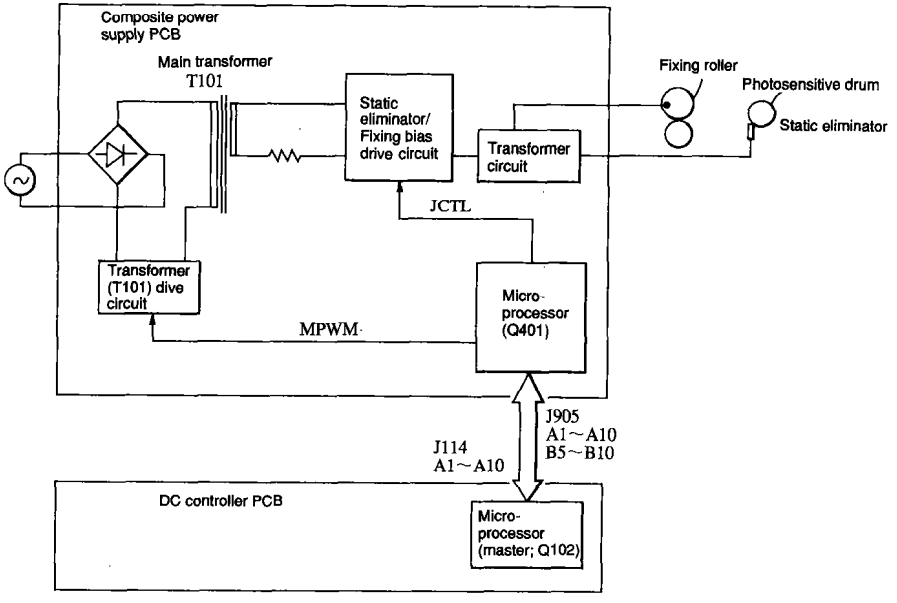


Figure 3-309


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## 2. Turning On and Off the Static Bias and Fixing Bias and Switching the Level

The microprocessor master (Q102) on the DC controller PCB controls the microprocessor (Q401) on the composite power supply PCB to generate the JCTL signal (analog). The signal causes the secondary side of the main transformer (T101) to turn on, thereby applying the static eliminator bias and the fixing bias.

The application voltage level to the static eliminator is switched by changing the voltage of the JCTL signal. Table 3-302 shows the conditions under which the application voltage is switched and the corresponding application voltages.

| Condition | Application voltage |
|---|---|
| 1st side of one-sided/ two-sided copying and overlay copy | 3.0K V (approx.) |
| 2nd side of two-sided and overly copy | 4.0K V (approx.) |

**Table 3-302**

The main transformer (T101) is driven by the drive signal (MPWM) generated by the microprocessor (Q401). In addition to the foregoing functions, the main transformer (T101) is used to serve the DC power supply and as the transformer for other high-voltage loads.

The microprocessor master (Q102) on the DC controller PCB and the microprocessor (Q401) on the composite power supply PCB exchange data on an 8-bit signal line and a 3-bit command line.

## 3. Preventing Separation Failure (thin paper)

Depending on the site of installation, thin paper can fail to separate from the photosensitive drum. To prevent such a problem, the copier is equipped with a mechanism that keeps the application voltage to the static eliminator at 4.0 kV at all times (Service Mode; ✳ 5 ✳ SPCL_PPR).

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# G. Controlling the Developing Bias

## 1. Outline

Figure 3-310 shows the circuit that controls the developing bias, and the circuit has the following functions:

- turns on and off the developing bias AC component.
- turns on and off the developing bias DC component.
- controls the developing bias DC component.
- maintains the developing bias DC component.

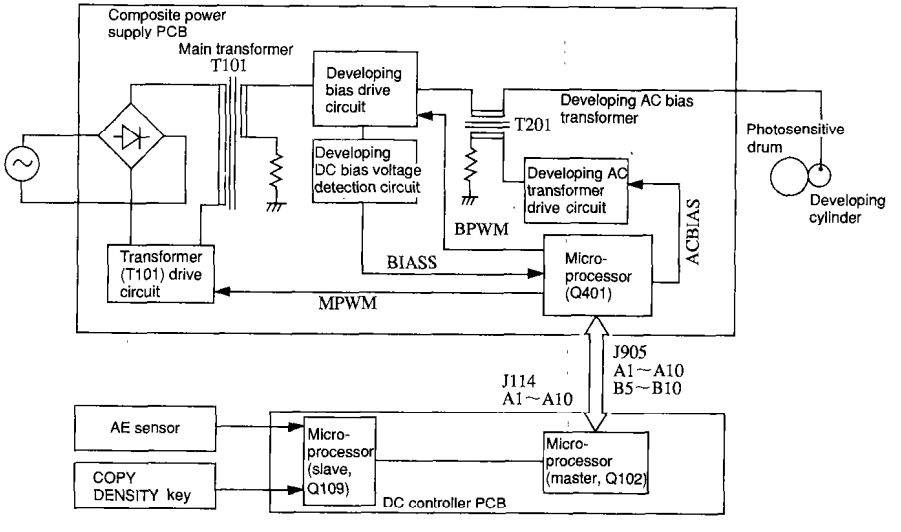


**Figure 3-310**


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## 2. Turning On and Off the Developing Bias DC Component and Maintaining a Constant Voltage

The microprocessor master (Q102) on the DC controller PCB controls the microprocessor (Q401) on the composite power supply PCB to generate the BPWM signal (pulse). The signal causes the secondary side of the main transformer (T101) to turn on, thereby applying the developing bias DC component.

The microprocessor reads the BIAS (analog) signal from the developing DC bias voltage detection circuit while the developing bias DC component is being applied, and maintains the output voltage constant.

The main transformer (T101) is driven by the drive signal (MPWM) from the microprocessor (Q401). In addition to the foregoing functions, the main transformer (T101) is used to serve the DC power supply and as the transformer for other high-voltage loads.

## 3. Controlling the Developing Bias DC Component Voltage Level

The copier changes the voltage level of the developing bias DC component to suit the following:

- setting of the COPY DENSITY key
- output of the AE sensor

The developing bias DC component is varied between –60 and –600 V by changing the timing at which the BPWM signal is generated.

## 4. Turning On and Off the Developing Bias AC Component

The microprocessor master (Q102) on the DC controller PCB controls the microprocessor (Q401) on the composite power supply PCB to generate the ACBIAS signal (pulse). The signal causes the developing bias AC component transformer (T201) to turn on, thereby adding the AC bias of the developing bias to the DC bias for application.

- application frequency: 1800 Hz (approx.)
- application voltage: 1300 Vp–p

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# H. Measuring the Document Density

## 1. Outline

The copier is equipped with an automatic exposure (AE) adjustment mechanism that controls the DC component of the developing bias to suit the density of the document. Since the AE mechanism varies the DC component of the developing bias according to the density of the document, you can obtain copies free of fogging as long as the document is more or less uniform in density.

The DC component controlled by the AE mode is indicated in the COPY DENSITY indicator on the copier's control panel.

## 2. Mechanism

The scanning lamp (LA1) is turned on at a specific intensity during initial rotation (INTR), and the scanner is moved forward by about 27 mm to expose the document.

While the scanning lamp is held in position, the light reflected by a specific area (Figure 3-311) is detected by the AE sensor (photodiode), and the output is sent to the DC controller PCB.

Based on the input, the DC controller PCB in turn computes the optimum value for the developing bias to be used during copying operation, and sends the result to the microprocessor (Q401). Figure 3-312 shows the variation of the developing bias DC component caused by changes in the density of a document.

The graph is based on an intensity by which copies may be made of newspapers or the Test Sheet without fogging.

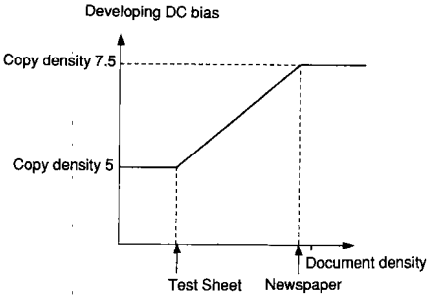
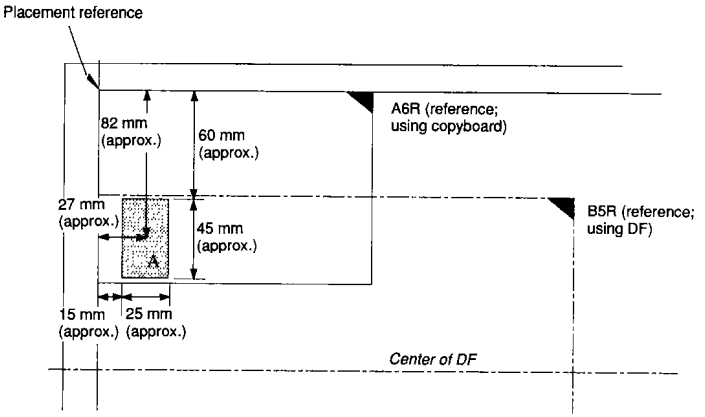



**Figure 3-312**




Note: A indicates the position of the AE sensor.

**Figure 3-311**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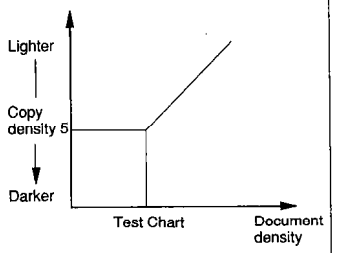
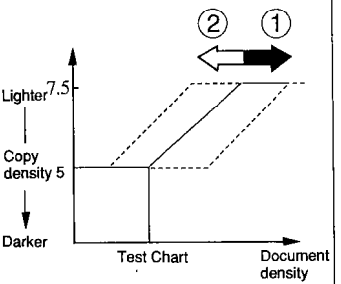
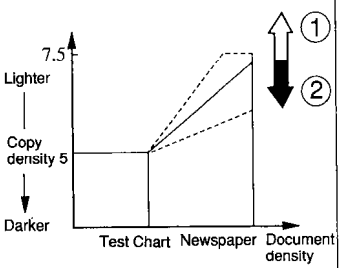
## 3. AE Adjustment

You can adjust the copier's AE mechanism for the following in service mode:

- automatic (✱ 4 ✱)
- scanning lamp drive voltage for AE exposure (✱ 3 ✱)
- development DC bias for newspapers in AE mode (✱ 3 ✱)

| Item | Function | Description | Remarks |
|---|---|---|---|
| ✱ 4 ✱ AE_ADJ | AE scan intensity automatic adjustment |  | Automatically adjusted so that the copy density is 5 when a document is copied under 'AE_ADJ'. |
| ✱ 3 ✱ AE_LIGHT | AE scan adjustment |  | ① If the setting is lowered in service mode, AE copies will become darker.<br>② If the setting is raised in service mode, AE copies will be lighter. |
| ✱ 3 ✱ AE_SLOP | AE slope |  | ① If the setting is increased in service mode, newspaper copies will be lighter.<br>② If the setting is decreased in service mode, newspaper copies will be darker. |

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# I. Developing Assembly and Drum Cleaner

## 1. Outline

The copier's developing assembly and the developing rail may be locked or released together manually by using the lock lever.

The developing cylinder, the stirring rod inside the developing assembly, and the blade inside the drum cleaner are rotated by the drive of the main motor (M1).

The level of toner is monitored by the toner absent signal (TEP) from the toner sensor inside the developing assembly.

The waste toner collected by the cleaning blade is stored inside the drum cleaner container, and the level of waste toner inside the container is detected by the waste toner full sensor (PS15).

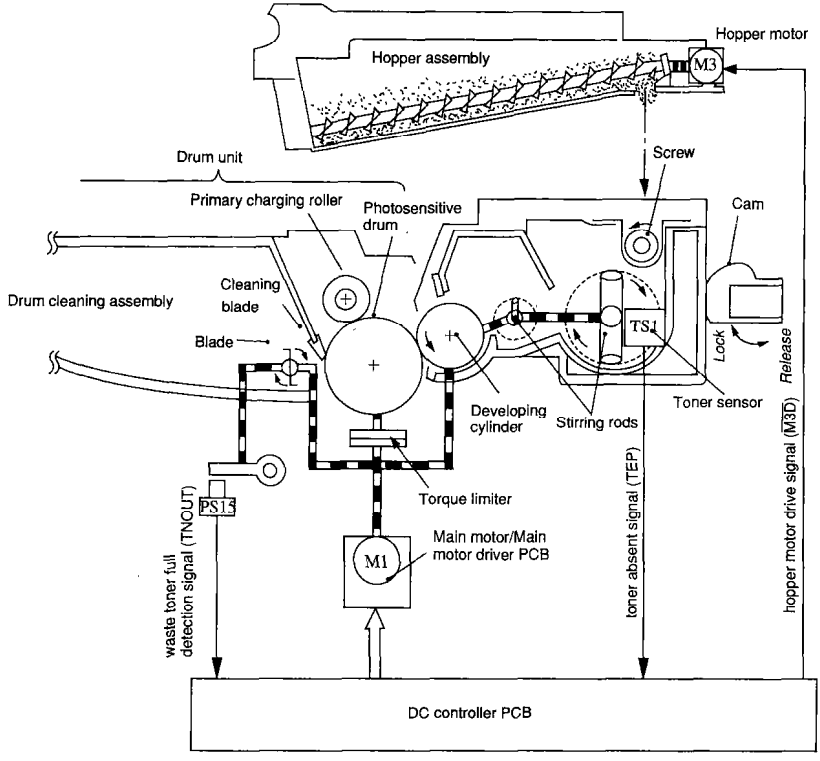


**Figure 3-313**


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## 2. Detecting the Level of Toner and Controlling Supply

The level of toner inside the developing assembly is monitored by the toner sensor (TS1). The toner is a piezoelectric type, and generates the toner absent signal ($\overline{TEP}$=0) when the level of toner falls below a specific value.

If $\overline{TEP}$=0 remains for 1 sec or more, the DC controller rotates the hopper motor (M3) to supply toner.

The hopper motor drive signal ($\overline{M3D}$) is generated in 5-sec cycles; M3D=1 for 1 sec, and M3D=0 for 4 sec.

The hopper motor (M3) is stopped when the toner absent signal ($\overline{TEP}$) goes 1.

If the toner absent signal ($\overline{TEP}$) does not go '1' within 25 sec after the supply operation has been started, the DC controller PCB identifies the condition as the absence of toner and indicates the 'ADD TONER' message on the display.

**Reference:**

The detection unit of the toner sensor used inside the developing assembly is a piezoelectric oscillator which oscillates at several kHz in the absence of toner, causing the sensor output to go '0'. When toner is present, the weight of the toner prevents the oscillation, causing the sensor output to go '1'.

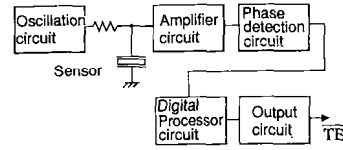


**Figure 3-314**

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## 3. Monitoring Waste Toner

The waste toner scraped off by the cleaning blade is forwarded deep inside the cleaner container by the waste toner blade inside the drum cleaner.

The coupling shown in Figure 3-315 is forced against the blade drive by a spring to transmit drive from the main motor (M1), thereby rotating the waste toner blade.

When the cleaner container becomes full of waste toner, the rotation of the waste toner blade starts to drag, moving the coupling back and forth across its axis; this causes the coupling to push and release the waste toner sensor lever and the waste toner sensor (PS10) to go on and off.

The DC controller PCB monitors the state of the waste toner sensor (PS10) for about 2 sec at intervals of 0.02 sec after the main motor has turned on. If it detects the activation of the sensor 25 times or more during the period, it assumes that the cleaner container has become full of waste toner.

If this happens during the standby period, the copier indicates the EMPTY WASTE TONER message on the display. Instruct the user to make a service call if this message appears.

About 200 copies may still be made after the message appears, but it is best to replace the drum unit as soon as possible.

**Reference:**

The cleaner container becomes full of waste toner when about 60,000 copies are made of 6% documents.

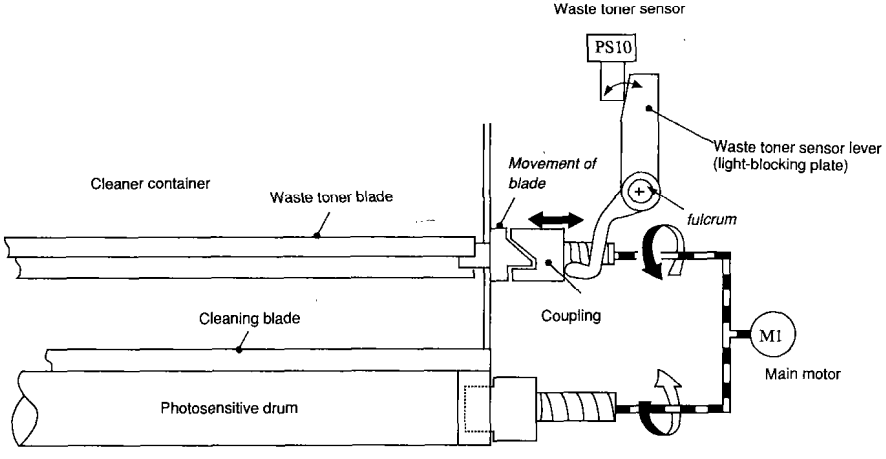


**Figure 3-315**


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# J. Blank Exposure Control

## 1. Outline

The copier is not equipped with LEDs or lamp to be used exclusively for blank exposure. For this reason, blank exposure for non-image areas and for gaps between sheets is executed by directing the light of the pre-exposure lamp to the photosensitive drum by way of a reflecting plate.

The copier's area of blank exposure is controlled by one open/close shutter and three slide shutters.

- Open/Close Shutter

The open-close shutter is found in the optical path for total blank exposure, and is operated by the shutter solenoid (SL4). The timing at which the open-close shutter solenoid (SL4) turns on and off is varied to suit the gaps between two sheets and create margins along the leading and trailing edges of the copies.

- Slide Shutters

The three slide shutters are found in the optical path for size blank exposure, and are positioned by two stepping motors.

The slide shutters are used to create margins on the left and right sides of the copies and to blank out the non-image areas on reduced copies.

## 2. Controlling the Blank (slide) Shutter Motors

The blank shutters (front and rear) are driven by two 2-phase stepping motors (one each). When the copier is switched on, the blank (slide) shutter motor (M8, M9) rotates to return the blank shutter to its home position. Thereafter, the motor rotates in response to the drive pulses from the DC controller PCB to move the blank shutter to a specific position to suit the selected reduction ratio, cassette size, and modes.

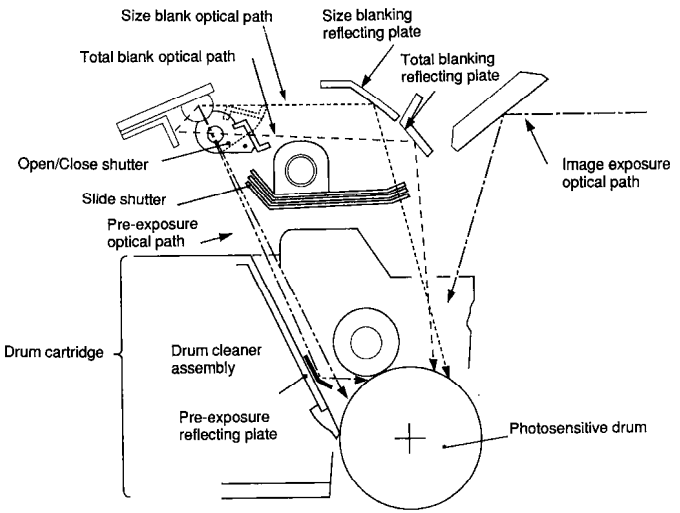


Figure 3-316

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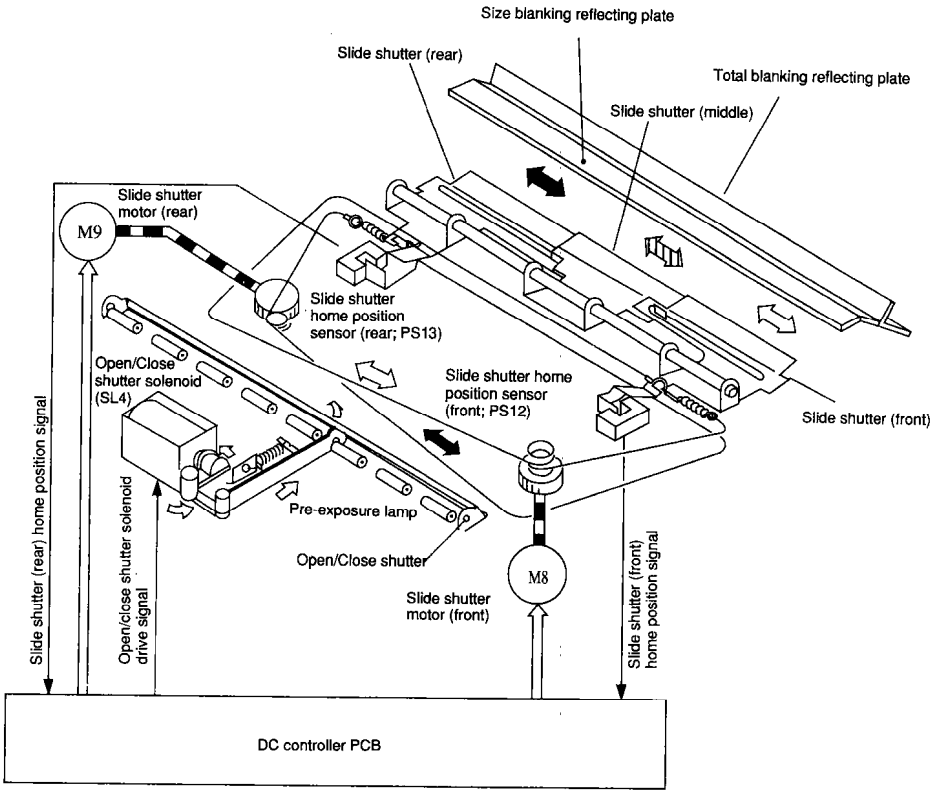


**Figure 3-317**


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# K. Controlling the Primary Charging Roller Cleaning Mechanism

## 1. Outline

The copier's primary charging roller is equipped with an automatic cleaning mechanism.

The automatic cleaning mechanism cleans the primary charging roller under the following conditions:

- when the temperature of the fixing assembly is 100°C or less at power-on.
- during 'PRR_CL' in service mode (✳ 4 ✳).

## 2. Cleaning the Primary Charging Roller

The primary charging roller is cleaned by turning on the primary charging roller solenoid (SL7) when the primary charging roller is rotating (WMUPR) while forcing the cleaning pad against the roller.

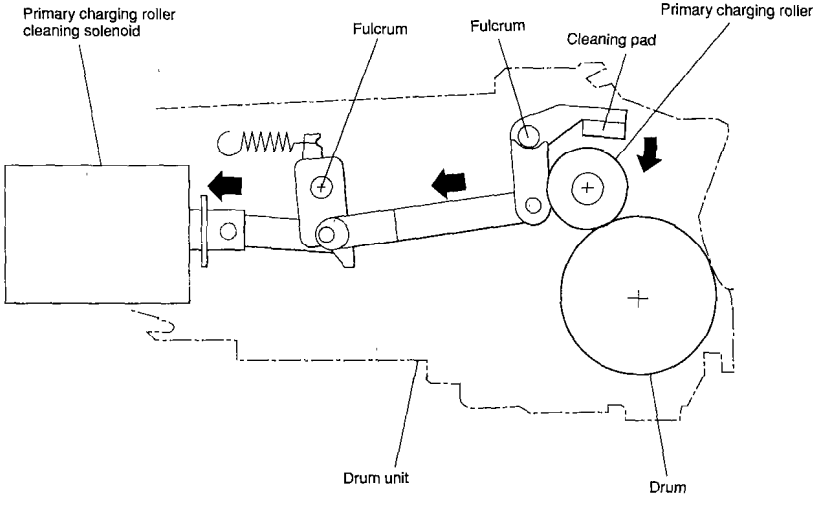


Figure 3-318

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# L. Locking and Releasing the Transfer Roller

## 1. Outline

The copier's transfer roller is equipped with a locking/releasing mechanism.

The locking/releasing mechanism locks or releases the transfer roller under the following conditions to prevent adhesion of toner on the roller.

- during initial multiple rotation (WMUPR)
- during last rotation after 50 copies (cumulative)

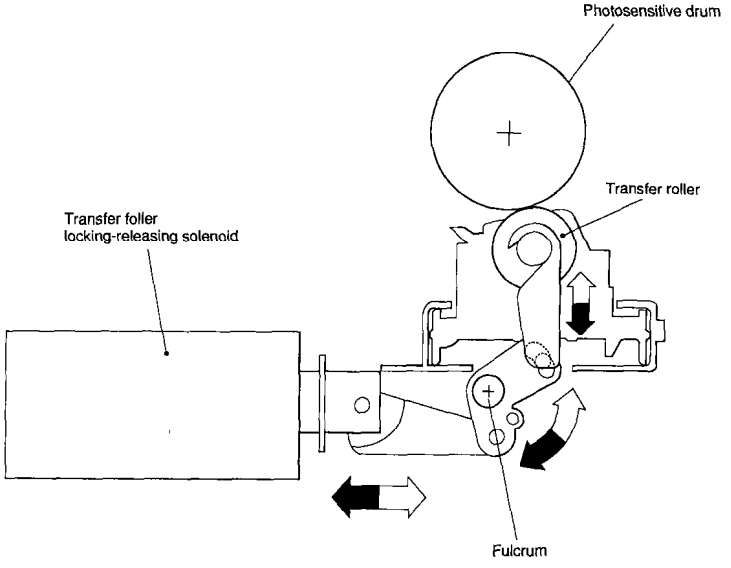


**Figure 3-319**


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# M. Detecting an Error in the Composite Power Supply PCB

## 1. Outline

The copier is equipped with a composite power supply, and a microprocessor (Q401) is attached to the composite power supply PCB. The DC controller PCB and the composite power supply PCB communicate with each other using an 8-bit data line and a 3-bit command line. In addition, a 2-bit communication check line, 3-bit error data transmission line, and a signal line used to turn on LED 101 (DC controller) are also provided. When any of the following errors is detected, the DC controller PCB indicates an error code on the control panel using the error data transmission line or turns on or flashes a LED to indicate the presence of an error.

- **Leakage of Transfer Bias**

When the error detection circuit for the transfer bias turns on and generates the TPRTCT signal to the microprocessor (Q401), the microprocessor sends a 3-bit error data signal to the DC controller PCB for indication of 'E065'; see Figure 3-308.

- **Fault in Communication between DC Controller PCB and Composite Power Supply PCB**

If an error occurs in the communication between the DC controller PCB and the composite power supply PCB, the microprocessor (Q401) sends a 3-bit error data signal to the DC controller PCB to indicate 'E244' and, at the same time, to flash the LED on the DC controller PCB at intervals of 5 sec; see Figure 3-303.

If an error associated with 'E244' is detected, the DC controller PCB causes all outputs to turn off in 5 sec; however, the LED on the DC controller PCB continues to flash.

- **Short Circuiting in the DC Power Supply Circuit**

If the composite power supply PCB detects an over current because of an error in DC loads or biting of a wire, the condition is indicated by flashing a LED at intervals of 2 sec; see Table 3-303.

- ***Error in High-Voltage Output Data***

When the difference between the setting and the actual control value of the signals associated with high voltage generated by the microprocessor (Q401) on the composite power supply PCB, the microprocessor (Q401) sends a 3-bit error data signal to the DC controller PCB to indicate 'E064'.

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## 2. Identifying an Error by LEDs

You can identify errors according to how the LED on the DC controller PCB remains on or flashes.

| LED mode | Copier condition | Error |
|---|---|---|
| on for 0.5 sec/off for 0.5 sec | normal | |
| on for 5 sec/off for 5 sec | error in communication between composite power supply PCB and DC controller PCB | • faulty harness<br>• faulty microprocessor |
| on for 2 sec/off for 2 sec | low-voltage shorting | • faulty harness<br>• faulty DC load<br>• faulty microprocessor |
| remains on | error | • faulty LED drive circuit on composite power supply PCB<br>• faulty microprocessor |
| remains off | error | • faulty LED drive circuit on composite power supply PCB<br>• disconnected LED connector or poor contact (J114 on DC controller PCB or J905 on composite power supply PCB)<br>• faulty microprocessor |

**Table 3-303**


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# IV. PICK-UP/FEEDING SYSTEM

## A. Outline

The copier uses center reference, in which copy paper is fed in the middle of the pick-up/feeding path. The copier's pick-up system consists of the upper and lower cassettes and a multifeeder.

The copy paper picked up from the cassettes or the multifeeder is controlled so that it is matched to the leading edge of the image on the photosensitive drum, and is forwarded to the transfer, separation, feeding, and fixing assembly to reach the copy tray.

A total of five sensors are provided to monitor the movement of copy paper; see Table 3-401

| No. | Name |
|---|---|
| PS6 | vertical path roller 1 paper sensor |
| PS7 | vertical path roller 2 paper sensor |
| PS9 | pre-registration paper sensor |
| PS10 | separation sensor |
| PS11 | delivery paper sensor |

**Table 3-401**

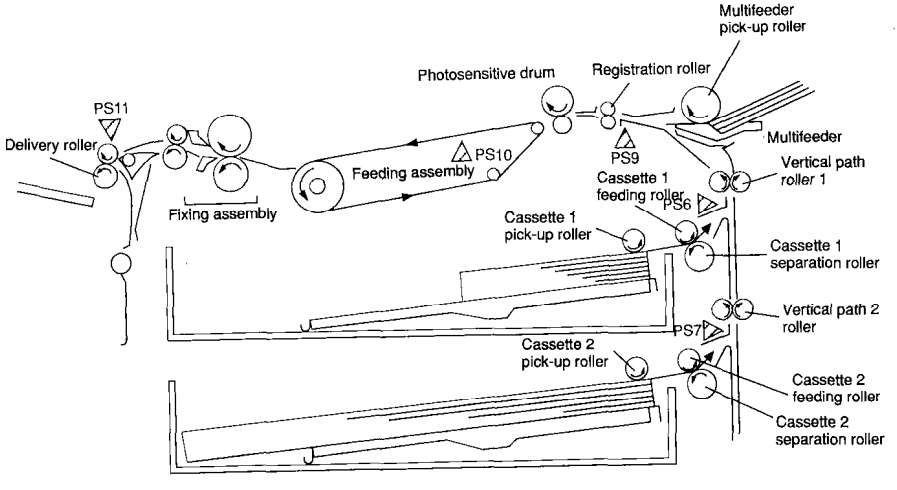


**Figure 3-401**

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# B. Pick-Up from Cassette

## 1. Pick-Up Mechanism

The copy paper inside the cassette is lifted by the lifter so that it remains in contact with the pick-up roller.

When the pick-up roller (CL2 or CL3) turns on, the pick-up roller starts to rotate to feed the paper. Thereafter, the pick-up roller release solenoid (SL1 or SL2) turns on to move the pick-up roller from the paper.

The copy paper then moves between the feeding roller and the separation roller, which ensure that no more than one sheet of paper is fed at a time. The paper is then moved to the registration roller by the vertical path roller.

The registration roller is used to control the paper so that its leading edge matches the leading edge of the image on the photosensitive drum; see p. 3-64.

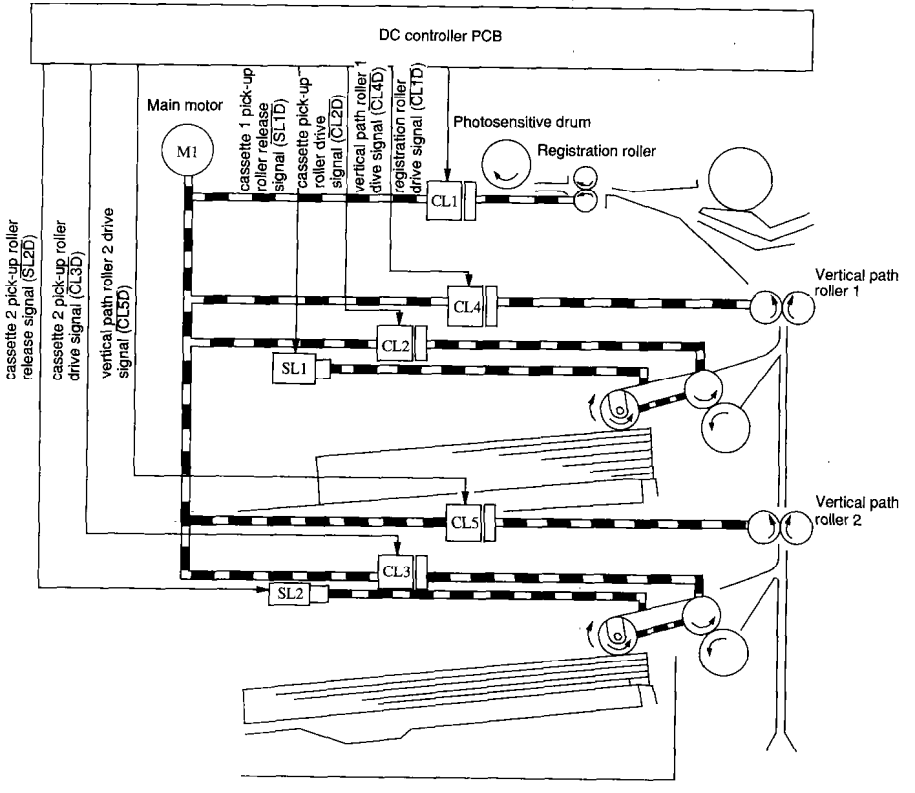


Figure 3-402


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## 2. Sequence of Pick-Up Operations

- **from cassette 1, A4, 2 copies, continuous**

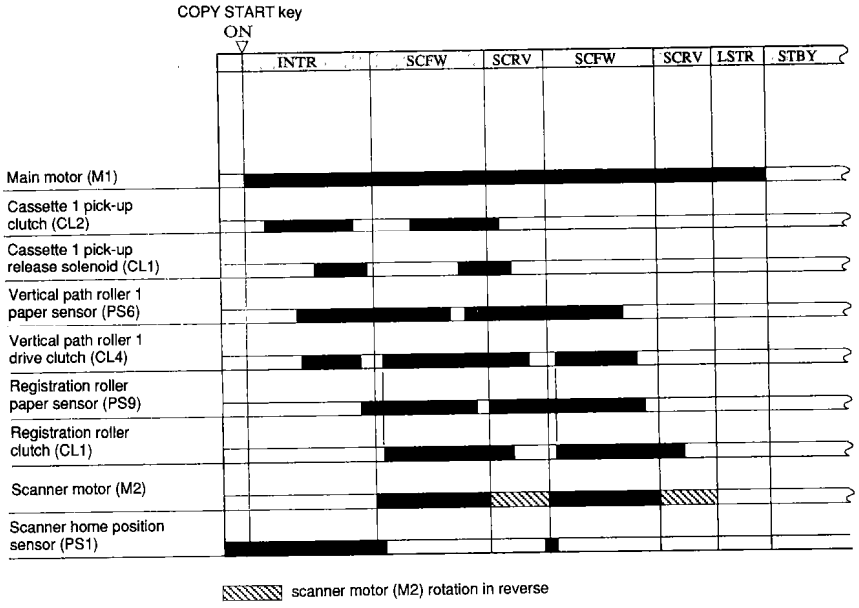


**Figure 3-403**

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## C. Cassette Lifter

When the cassette is slid inside the copier, the pick-up roller lowers, and the light-blocking plate leaves the lifter position sensor (PS3, PS4). The condition turns on the lifter motor (M4, M5) to raise the lifter; the motor stops when the top sheet of the stack of paper on the lifter reaches the lifter position sensor (PS3, PS4).

When the cassette runs out of copy paper, and the paper detecting spacer attached to the pick-up roller shaft drops, the paper detecting lever leaves the paper sensor (PS2, PS5); as a result, the 'ADD PAPER' message is indicated on the control panel.

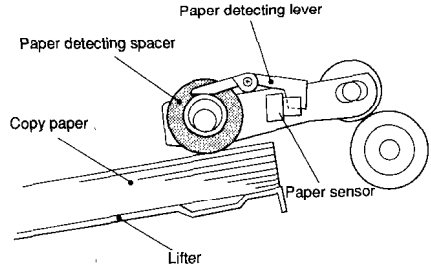


**Figure 3-404**

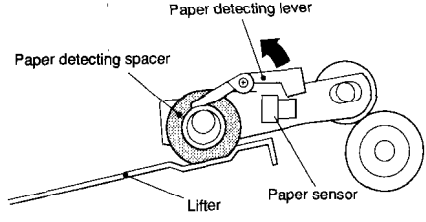


**Figure 3-405**

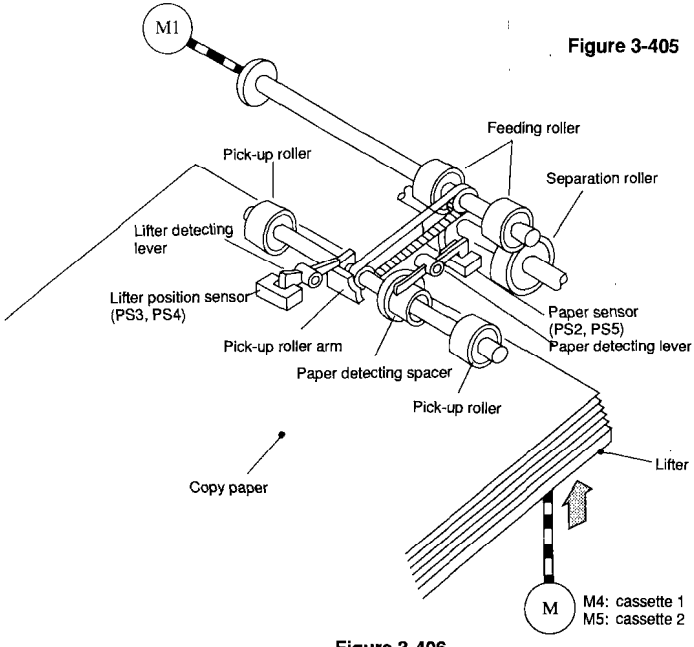


**Figure 3-406**


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# D. Identifying the Copy Paper Size

## 1. Outline

The size of the copy paper inside the cassette is identified by the paper size sensors attached to the rear of the cassette holder.

When the cassette is slid into the copier, the sensors are pushed by the bosses on the cassette, thereby enabling identification of the width and length of the paper. Based on the combination of width and length, the copier recognizes the size of the paper and, at the same time, determines the point of scanner reversal and the intensity of blank exposure.

The bosses used to press the paper size sensors operate in conjunction with the guide plate inside the cassette; to change the arrangement, simply set the guide plate to suit the paper size.

## 2. Identifying the Copy Size

The copy paper length sensors are two photo interrupters, whose output combinations are used to identify the length of the paper.

The copy paper width sensor is a variable resistor, whose output resistance is used to identify the width of the paper.

Figure 3-407 shows the relationship between the paper widths and the outputs of the variable resistor. You must enter the default setting whenever you have replaced the sensors or the DC controller PCB. (See the SERVICE HANDBOOK.)

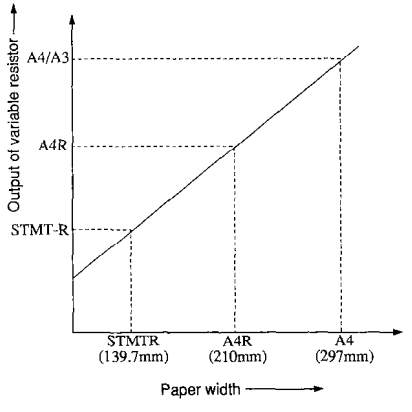


**Figure 3-407**

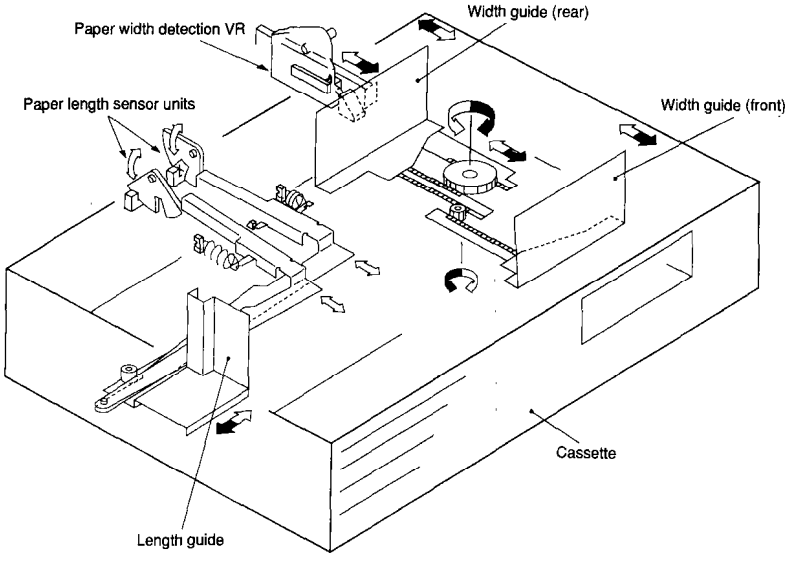


**Figure 3-408**

### 3. Mark on Width Guide Rail

The width guide rail found inside the cassette has holes to serve as a reference for determining paper sizes, and the holes are marked A through M as shown in Table 3-402.

You may refer to the holes if the user reports skew movement of copy paper. Use the holes to decide whether the cassette is correctly set to suit the copy paper used.

**Note:**
Do not disclose the information to the user.

| Mark | Paper | Remarks |
|---|---|---|
| A | STMT-R | |
| B | A5-R | |
| C | B5-R | |
| D | KLGL-R | |
| E | GLTR-R | |
| F | G-LGL | G3 |
| G | A4-R | |
| H | LGL/LTR-R | |
| I | FLSC | G2 |
| J | B4/B5 | |
| K | G-LTR | G1 |
| L | 11" × 17"/LTR | G4 |
| M | A3/A4 | |

(For G1 through G4, see Table 3-404.)

**Table 3-402**


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## 4. Paper Sizes

The microprocessor of the DC controller PCB decides on one of the following paper sizes in response to the paper width and length inputs.

| Paper length sensor / Paper width sensor (slice level: mm) / Signal | PS102/ PS104 | PS101/ PS103 | PS102/ PS104 | PS101/ PS103 | PS102/ PS104 | PS101/ PS103 | PS102/ PS104 | PS101/ PS103 |
|---|---|---|---|---|---|---|---|---|
| ON/OFF | SZ2 | SZ1 | SZ2 | SZ1 | SZ2 | SZ1 | SZ2 | SZ1 |
| | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 |
| 288.5 | A4 | | — | | A3 | | — | |
| 273.7 | (G4) | | — | | 11"x17" | | — | |
| 261.8 | (G1) | | — | | — | | — | |
| 238.0 | B5 | | — | | B4 | | — | |
| 212.9 | STMT | | LTRR | | LGL | | (G2) | |
| 206.6 | A5 | | A4R | | — | | (G3) | |
| 196.6 | G-LTRR | | — | | — | | | |
| 186.0 | K-LGLR | | — | | — | | — | |
| 165.2 | B5R | | — | | — | | — | |
| 144.1 | A5R | | — | | — | | — | |
| | STMTR | | — | | — | | — | |

**Table 3-403**

Table 3-404 shows the paper sizes identified by the copier; specify appropriate sizes in service mode.

√ stands for a size set at the factory.

| Group | Size | |
|---|---|---|
| G1 | √ | G-LTR<br>K-LGL |
| G2 | √ | FOOLSCAP<br>OFFICIO<br>E-OFFI<br>A-LGL<br>A-OFFI |
| G3 | √ | G-LGL<br>FOLIO<br>AUS-FLS |
| G4 | √ | LTR<br>A-LTR |

**Table 3-404**

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• **Acceptable papers**

| Paper | Notation | Size (vertical x horizontal; mm) |
|---|---|---|
| A3 | A3 | (297±1) × (420±1) |
| A4R | A4R | (210±1) × (297±1) |
| A4 | A4 | (297±1) × (210±1) |
| A5 | A5 | (210±1) × (148.5±1) |
| A5R | A5R | (148.5±1) × (210±1) |
| B4 | B4 | (257±1) × (364±1) |
| B5R | B5R | (182±1) × (257±1) |
| B5 | B5 | (257±1) × (182±1) |
| 11"×17" | 11×17 | (279±1) × (432±1) |
| LETTER R | LTRR | (216±1) × (297±1) |
| LETTER | LTR | (297±1) × (216±1) |
| STATEMENT | STMT | (216±1) × (139.5±1) |
| STATEMENT R | STMTR | (139.5±1) × (216±1) |
| LEGAL | LGL | (216±1) × (356±1) |
| KOREAN LEGAL | K-LGL | (265±1) × (190±1) |
| KOREAN LEGAL R | K-LGLR | (190±1) × (265±1) |
| FOOLSCAP | FLSC | (216±1) × (330±1) |
| AUSTRALIAN FOOLSCAP | A-FLS | (206±1) × (337±1) |
| OFICIO | OFI | (216±1) × (317±1) |
| EQUADORAN OFICIO | E-OFI | (220±1) × (320±1) |
| BOLIVIAN OFICIO | B-OFI | (216±1) × (355±1) |
| ARGENTINE LETTER | A-LTR | (280±1) × (220±1) |
| ARGENTINE LETTER-R | A-LTRR | (220±1) × (280±1) |
| GOVERNMENT LETTER | G-LTR | (267±1) × (203±1) |
| GOVERNMENT LETTER-R | G-LTRR | (203±1) × (267±1) |
| ARGENTINE LEGAL | A-LGL | (220±1) × (340±1) |
| GOVERNMENT LEGAL | G-LGL | (203±1) × (330±1) |
| FOLIO | FOLI | (216±1) × (317±1) |
| ARGENTINE OFFICIO | A-OFI | (220±1) × (340±1) |

**Table 3-405**

## 5. Storing the Paper Width Default Setting

See page 3-170.


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# E. Multifeeder

## 1. Outline

The multifeeder picks up paper from the stack placed on the tray, and is capable of continuous feeding.

The presence/absence of paper on the tray is checked by the multifeeder paper sensor (PS8). The paper guide plate is used to force the paper placed on the tray against the pick-up roller. The pick-up roller starts to rotate when the drive of the main motor (M1) reaches it by way of a clutch.

The pick-up roller and the separation pad operate together to ensure that no more than one sheet of paper is fed to the registration roller.

The above series of operations is repeated for each pick-up.

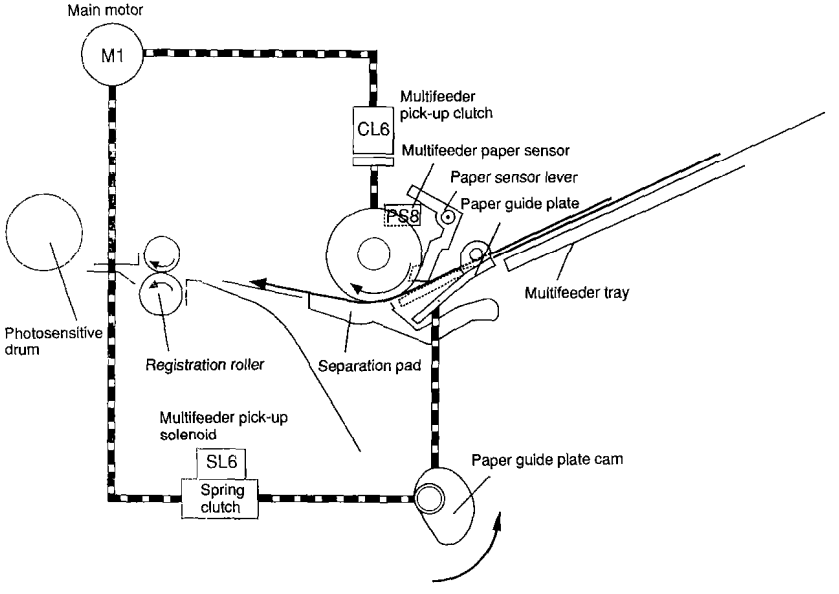


Figure 3-409

## 2. Identifying the Size of the Paper on the Multifeeder Tray Guide

A variable resistor is used to identify the width of the paper placed on the multifeeder tray. When the user sets the slide guide to suit the width of the paper, the variable resistor operates in conjunction with the movement of the slide guide.

The width identified in this way is used to control the lens and blank exposure. The length of the paper placed on the multifeeder tray, on the other hand, is identified based on the time the pre-registration sensor (PS9) remains on.

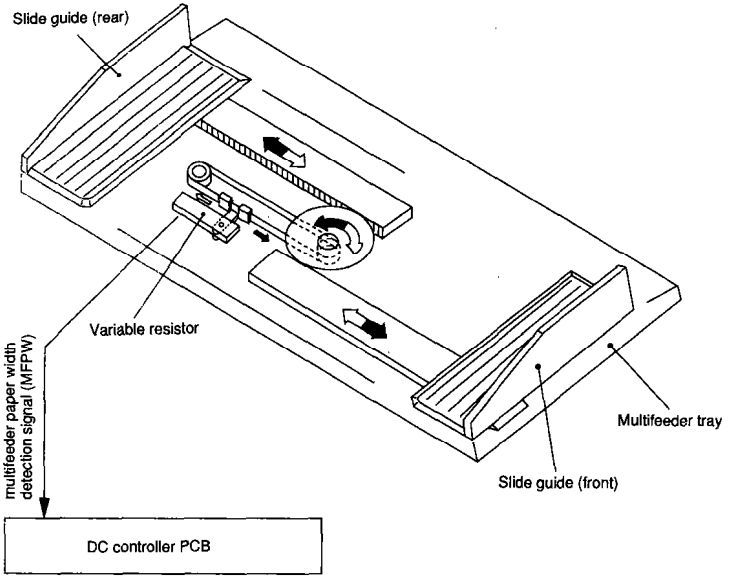


**Figure 3-410**


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## 3. Sequence of Pick-Up Operations (multifeeder)

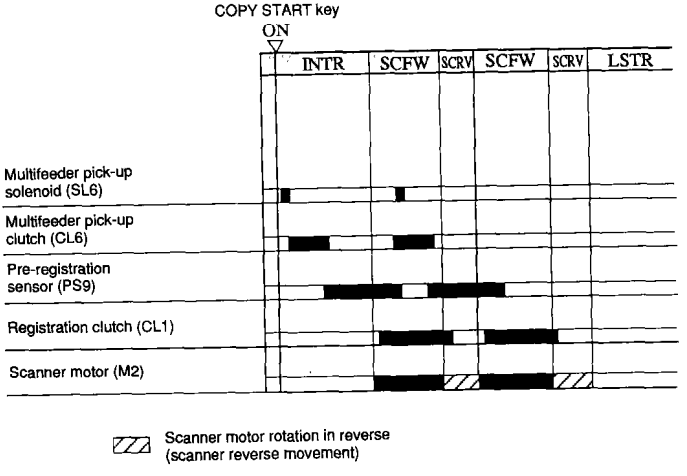


**Figure 3-411**

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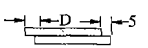
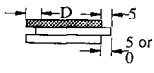
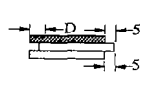
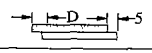
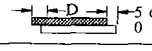
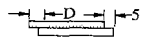
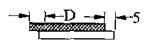
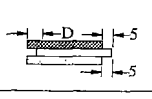
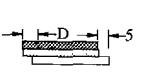
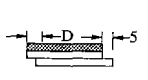
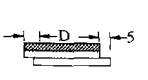
## F. Controlling the Registration Clutch

The registration clutch (CL1) is used to ensure that the copy paper and the image on the drum match at a specific position.

Unless binding mode is selected, the registration clutch (CL1) is controlled so that the leading edge of the copy paper matches the leading edge of the drum.

| Selected mode | | Paper timing | Shift (mm) | Paper on copy tray |
|---|---|---|---|---|
| one-sided document → one-sided copy | | B | |  |
| one-sided documents ↓ two-sided copy | copying on 1st side | A | may be set to between 0 and 20 mm; the diagrams represent when the shift is set to 5 mm. |  |
| | copying on 2nd side | B | | |
| two-sided document ↓ two-sided copy | copying on 1st side | A | |  |
| | copying on 2nd side | B | | |
| two-sided document ↓ one-sided copys | copying on 1st side | B | |  |
| | copying on 2nd side | B | |  |
| page separation (one-sided copying) | copying on 1st side (left) | B | |  |
| | copying on 2nd side (right) | B | |  |
| page separation ↓ two sided copy | copying on 1st side (left) | A | |  |
| | copying on 2nd side (right) | B | | |
| one-sided documents ↓ overlay copy | copying on 1st side | B | |  |
| | copying on 2nd side | B | | |
| two-sided document ↓ overlay cover | copying on 1st side | B | |  |
| | copying on 2nd side | B | | |
| page separation ↓ overlay copy | copying on 1st side (left) | B | |  |
| | copying on 2nd side (right) | B | | |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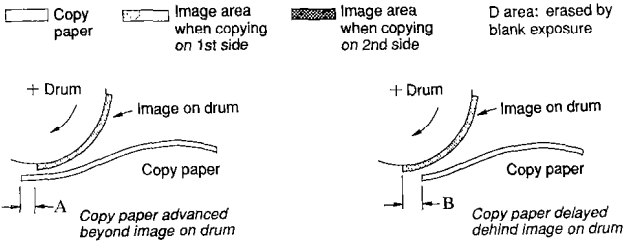
Copy paper
Image area when copying on 1st side
Image area when copying on 2nd side
D area: erased by blank exposure
+ Drum
Image on drum
Copy paper
A
Copy paper advanced beyond image on drum
+ Drum
Image on drum
Copy paper
B
Copy paper delayed behind image on drum

**Figure 3-412**

# G. Fixing and Delivery Assemblies

## 1. Outline

The upper, lower, and delivery rollers are driven by the main motor (M1).

The copier heats the upper roller using two fixing heaters (H1, 700 W; H2, 600 W), and the surface temperature of the roller is monitored by a thermistor (TH1).

Based on the fixing temperature signal (TH1, analog), the DC controller PCB turns on and off the fixing heater drive signal (MHRD, SHRD).

The copier uses center reference for feeding paper, and the coating of its upper fixing roller is thinner than the coatings of conventional rollers. The temperature and the area of heating during copying operation vary according to the following:

- copy paper size (width)
- copies made in continuous mode
- ambient temperature
- mode

The delivery assembly is equipped with a delivery flapper. In two-sided/overlay copy mode (only when duplexing unit is in use), the DC controller PCB generates the delivery paper deflector solenoid drive signal ($\overline{SL5D}$) to drive the delivery paper deflector to divert the paper to the duplexing unit.

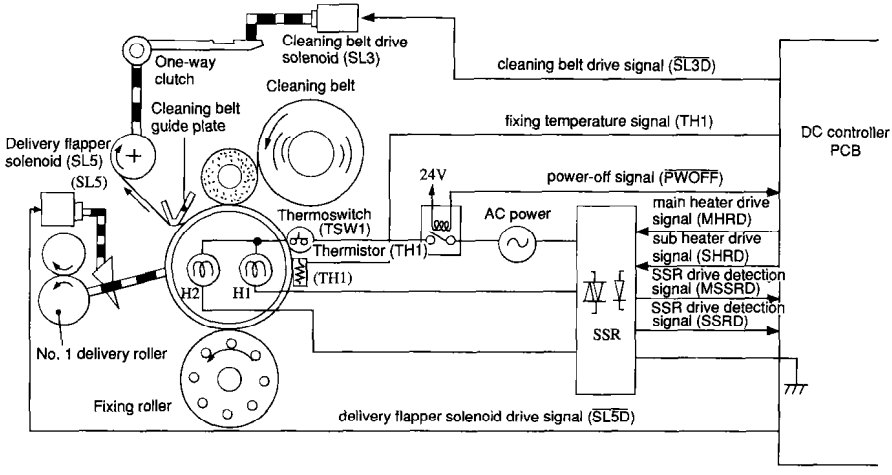


**Figure 3-413**


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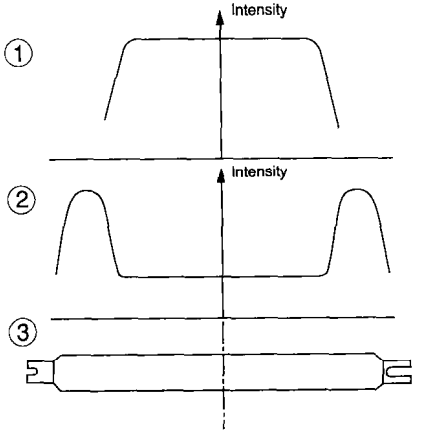
## 2. Controlling the Area Heated by the Fixing Roller

The upper fixing roller is heated by two heaters; main heater (H1) and sub heater (H2).

The copier uses two halogen lamps as its main heater (H1) and sub heater (H2) with different intensity distributions; see Figure 3-414.

Depending on the width of the copy paper, the periods in which these two heaters remain on are varied to ensure that the surface temperature of the fixing roller remains uniform and the ends of the roller does not overheat.




① Intensity distribution of main heater (H1)
② Intensity distribution of sub heater (H2)
③ External view of upper fixing roller

**Figure 3-414**

## 3. Controlling the Temperature of the Fixing Roller in Continuous Copying Mode

The coating of the copier's upper fixing roller is thinner than the coating of conventional rollers; for this reason, making small-size copies in continuous mode could cause the ends of the roller to overheat. To prevent such a problem, the copier controls the target temperature according to the number of copies being made. (For specifics, see *Sequence of Fixing Operations at Normal Temperature.*)

## 4. Low-Temperature Mode/Thick Paper Mode

**• Low-Temperature Mode**

To prevent faulty fixing under low-temperature conditions, the copier is provided with low-temperature mode. The copier automatically enters the mode if the ambient temperature sensor on the DC controller identifies the ambient temperature as being 10°C or less, thereby changing the control mechanism for the fixing roller temperature. (For specifics, see *Sequence of Fixing Operations at Low-Temperature mode/Thick Paper Mode.*)

**• Thick Paper Mode**

The copier is also provided with thick paper mode to improve fixing on thick paper or any other paper types that fail to provide good fixing. You can set thick paper mode in service mode (✳ 5 ✳; see the SERVICE HANDBOOK). When you set the mode, the copier controls the fixing roller temperature in the same way as low-temperature mode even if the ambient temperature sensor (TH2) on the DC controller PCB registers 10°C or more. (For specifics, see *Sequence of Fixing Operations at Normal Temperature.*)

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Sequence of Fixing Operations at Normal Temperature

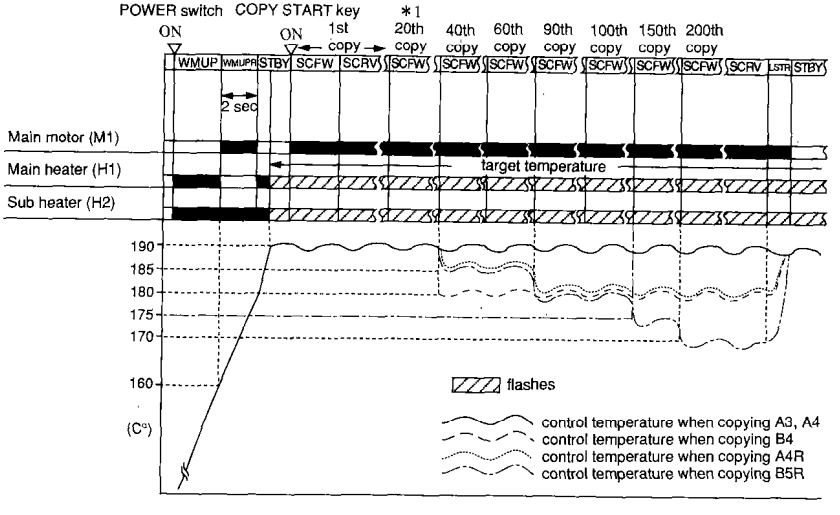


**Figure 3-415**

**Note:**
The counts shown in the chart will be added to obtain a cumulative count if the COPY START key is pressed within 1 min after copying operation is finished; however, this does not apply if the copy paper size is changed.


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Sequence of Fixing Operations in Low-Temperature Mode/Thick Paper Mode

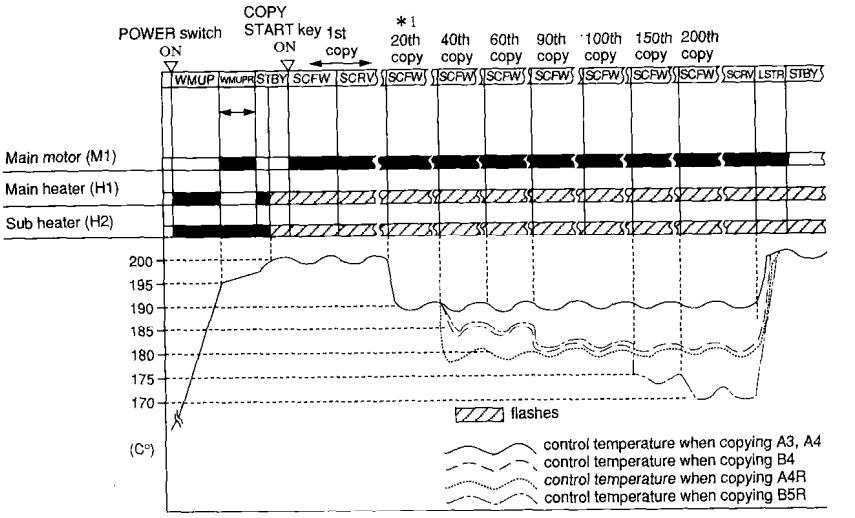


**Figure 3-416**

**Note:**
The counts shown in the chart will be added to obtain a cumulative count if the COPY START key is pressed within 1 min after copying operation is finished; however, this does not apply if the copy paper size is changed.

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## 5. Protection Mechanisms

The copier prevents malfunction of the fixing heater using the following three factors:

- signal from thermistor
- signal from SSR
- state of thermoswitch

### a. Protection by Signal from Thermistor

The DC controller PCB monitors the voltage of the thermistor (TH1), and indicates an error code when it detects overheating.

If the temperature of the fixing roller monitored by the thermistor (TH1) increase to 220°C, the DC controller indicates 'E001' on the control panel and stops copying operation.

If the temperature of the fixing roller monitored by the thermistor (TH1) exceeds 220°C for some reason, the DC controller generates the error auto power-off signal (PWOFF) to switch off the copier.

### b. Protection by Signal from SSR

If the fixing heater continues to remain on because of a shorted SSR, the DC controller PCB generates the error auto power-off signal (PWOFF) to switch the copier off.

The copier's SSR used to drive the fixing heater sends the SSR drive detection signal (MSSRD, SSSRD) to the DC controller PCB while the SSR is on. The DC controller PCB monitors the heater drive signal (MHRD, SHRD) and the SSR drive detection signal (MSSRD, SSSRD) simultaneously. If the SSR drive detection signal (MSSRD) is '1' while the main heater drive signal (MHRD) is '0', the DC controller PCB identifies the condition as an error in the SSR, and indicates 'E004' on the control panel and, about 2 sec later, generates the error auto power-off signal (PWOFF) to switch off the copier.

### c. Protection by Thermoswitch

The thermoswitch (TS1) turns off when its internal temperature exceeds 208°C to cut off the power to the fixing heater.

About 1.5 sec after the thermoswitch has turned off, the error auto power-off signal (PWOFF) is generated to switch off the copier.

**Reference:**

Once its contact has opened, the thermoswitch (TS1) will not return to normal state even after the temperature returns to normal. The switch may be used after cooling it to 0°C or less.

### d. Resetting the Copier after Activation of a Protection Mechanism

To reset the copier after the auto power-off signal (PWOFF) has been generated, remove the cause and switch on the copier.

If 'E001', 'E002', or 'E003' is indicated, remove the cause, and execute 'ERROR' in service mode.

**Reference:**

You can set *auto power-off* in user mode, which switches off the copier after a specific period of time. To prevent confusion, auto power-off triggered by the activation of a protection mechanism is referred to as *error auto power-off*.

## 6. Driving the Fixing Cleaning Belt

The cleaning belt used to clean the upper fixing roller is driven by the cleaning belt drive signal (SL3D) generated by the DC controller PCB; the cleaning belt drive solenoid (SL3) is turned on and off in response to the state ('0' or '1') of the cleaning belt drive signal, and the cleaning belt is taken up about 0.04 mm for each activation of the cleaning belt drive solenoid.

The cleaning belt guide plate is used to increase the area over which the cleaning belt is in contact with the upper fixing roller, thereby enhancing cleaning efficiency.

The activation of the cleaning belt drive solenoid (SL3) is timed to the arrival of the copy paper at the separation sensor (PS10); the frequency of activation, further, depends on the length of the copy paper.

| Length of paper | Frequency of solenoid activation |
|---|---|
| less than 216 mm | once |
| 216 mm or more | twice |

**Table 3-406**

The DC controller PCB keeps count of how many times the cleaning belt drive solenoid (SL3) has turned on, and it indicates the 'REPLACE CLEANING BELT' message on the display when the solenoid has turned 250,000 times. Instruct the user to make a service call when the message appears. You can check and reset the counter in service mode.


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Activation of Cleaning Belt Solenoid

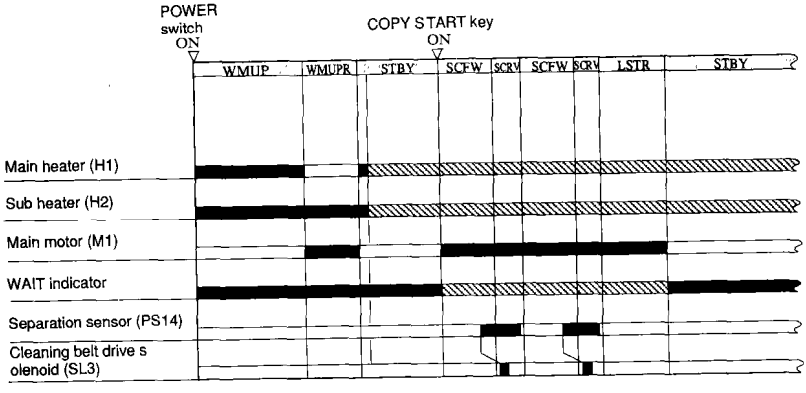


**Figure 3-417**

## 7. Fixing Roller Bias

A positive DC bias (about 700 V) is applied to the metal core of the upper fixing roller during copying operation.

The bias serves to reduce offset of toner to the fixing roller.

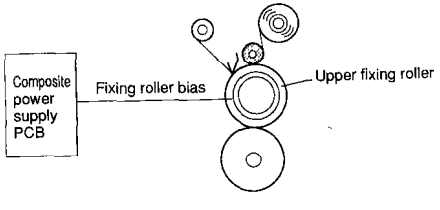


***Figure 3-418***

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## H. Detecting Jams

The copier has the following six paper sensors to monitor the movement of copy paper.

- vertical path roller 1 paper sensor (PS6)
- vertical roller 2 paper sensor (PS7)
- pre-registration sensor (PS9)
- separation sensor (PS10)
- delivery sensor (PS11)
- delivery vertical path paper sensor (PS14)

Jams are identified based on the presence/absence of paper over specific sensors at such times as stored in the memory of the microprocessor.

The copier is capable of retaining such data as the remaining number of copies to make at time of a jam and copy modes; such data remain even when the copier is turned off as when its front door is opened.

The microprocessor has the following jam detection sequence; in addition, it identifies a jam when its sensors detect paper at power-on.

When a jam is identified, the DC controller PCB immediately stops the copier's operation and cuts off the power tot the fixing heaters (H1, H2); at the same time, it flashes the JAM indicator and the JAM LOCATION indicator on the control panel.

If a jam has activated the jam detection mechanism, the copier will not count the jam as one of the copies it has made.

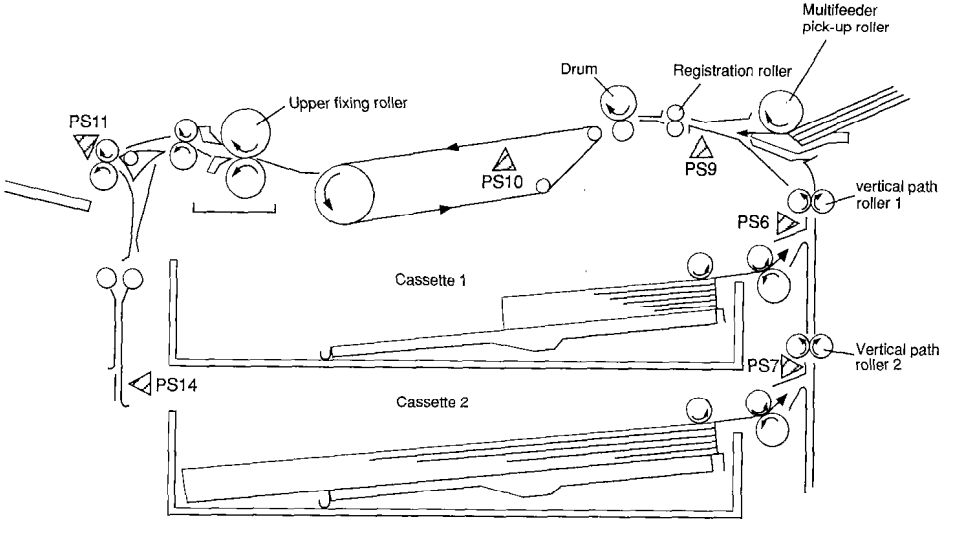


**Figure 3-419**


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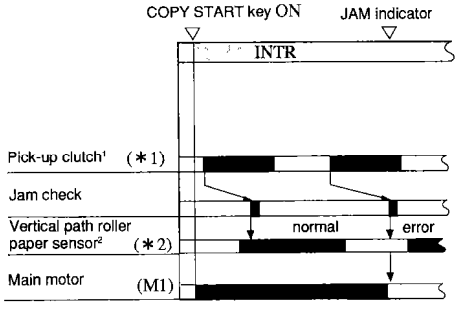
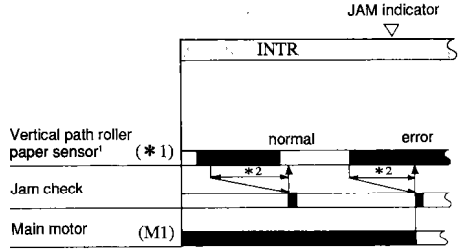
① Pick-Up Delay Jam




*1: pick-up from cassette 1 ..... cassette 1 pick-up clutch (CL2)
pick-up from cassette 2 ..... cassette 2 pick-up clutch (CL3)
pick-up from multifeeder ..... multifeeder pick-up clutch (CL6)
*2: pick-up from cassette 1 ..... vertical path roller 1 paper sensor (PS6)
pick-up from cassette 2 ..... vertical path roller 2 paper sensor (PS7)
pick-up from multifeeder ..... pre-registration sensor (PS9)

**Figure 3-420**

② Pick-Up Stationary Jam




*1: pick-up from cassette 1: ..... vertical path roller 1 paper sensor (PS6)
pick-up from cassette 3: ..... vertical path roller 2 paper sensor (PS7)
pick-up from multifeeder: ..... pre-registration sensor (PS9)
*2: varies depending on the length of paper.

**Figure 3-421**

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③ Separation Sensor Delay Jam

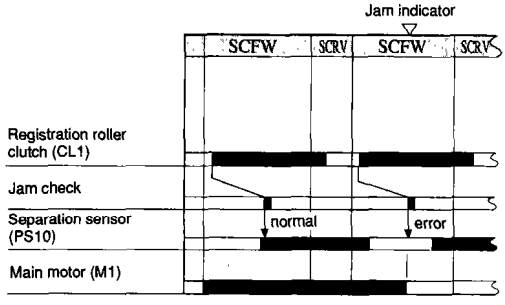


**Figure 3-422**

④ Separation Sensor Stationary Jam

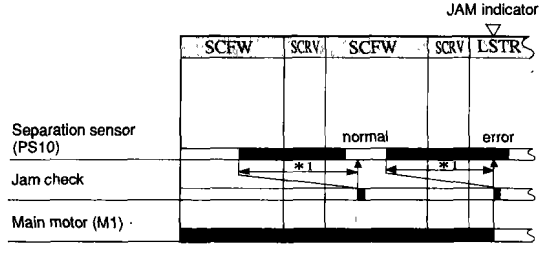


**Figure 3-423**


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⑤ Delivery Sensor Delay Jam

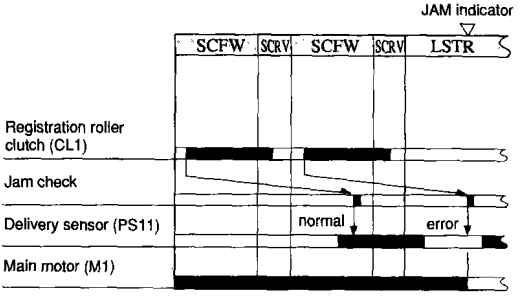
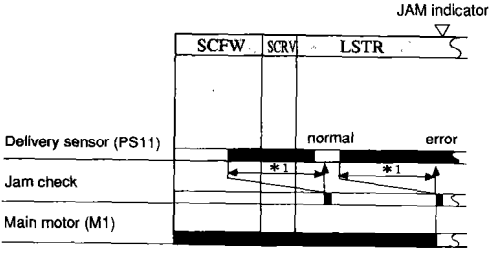



**Figure 3-424**

⑥ Delivery Sensor Stationary Jam




*1: *Varies depending on the length of paper.*

**Figure 3-425**

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⑦ Delivery Vertical Path Paper Sensor Delay Jam

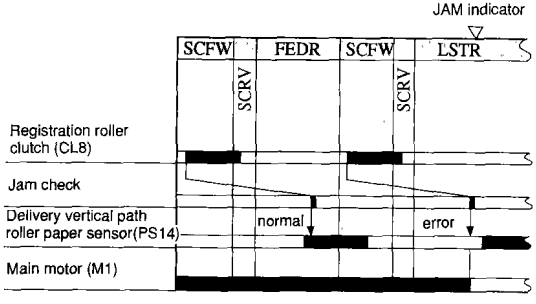
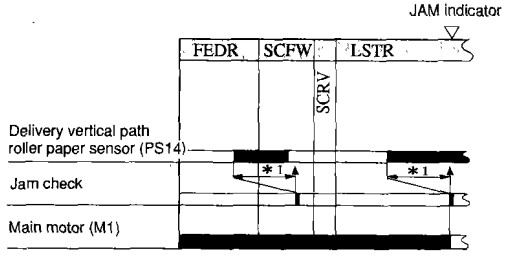



**Figure 3-426**

⑧ Delivery Vertical Path Paper Sensor Stationary jam




*1: Varies depending on the length of paper.

**Figure 3-427**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# I. Fans

The corer has three fans. Figure 3-407 shows the function, attached filter, and direction of each fan; Figure 3-428, on the other hand, shows the timing at which each fan is activated.

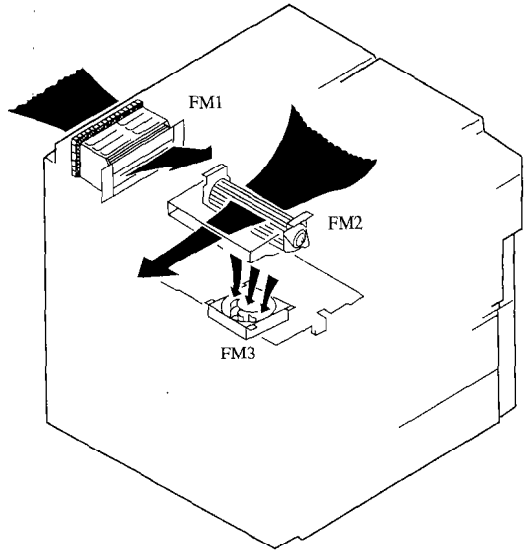


**Figure 3-428**

| No. | Name | Direction | Filter | Description |
|---|---|---|---|---|
| FM1 | Scanner cooling fan | Blowing | air | cools the scanner. |
| FM2 | Exhaust fan | Drawing | none | cools the inside of the machine.<br>creates an air current to block out dust. |
| FM3 | Feeding fan | Drawing | none | draws copy paper to the feeding belt. |

**Table 3-407**

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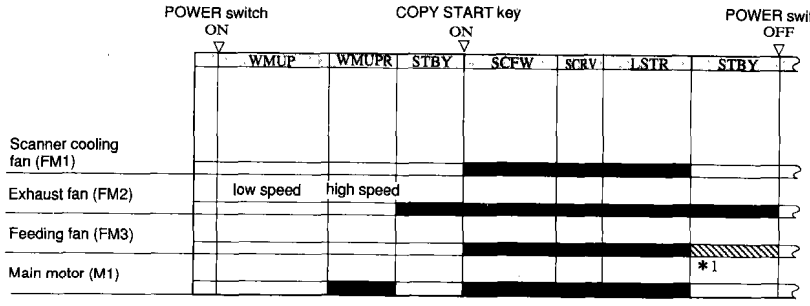


*1: turns off if STBY continues for 5 min.

**Figure 3-429**


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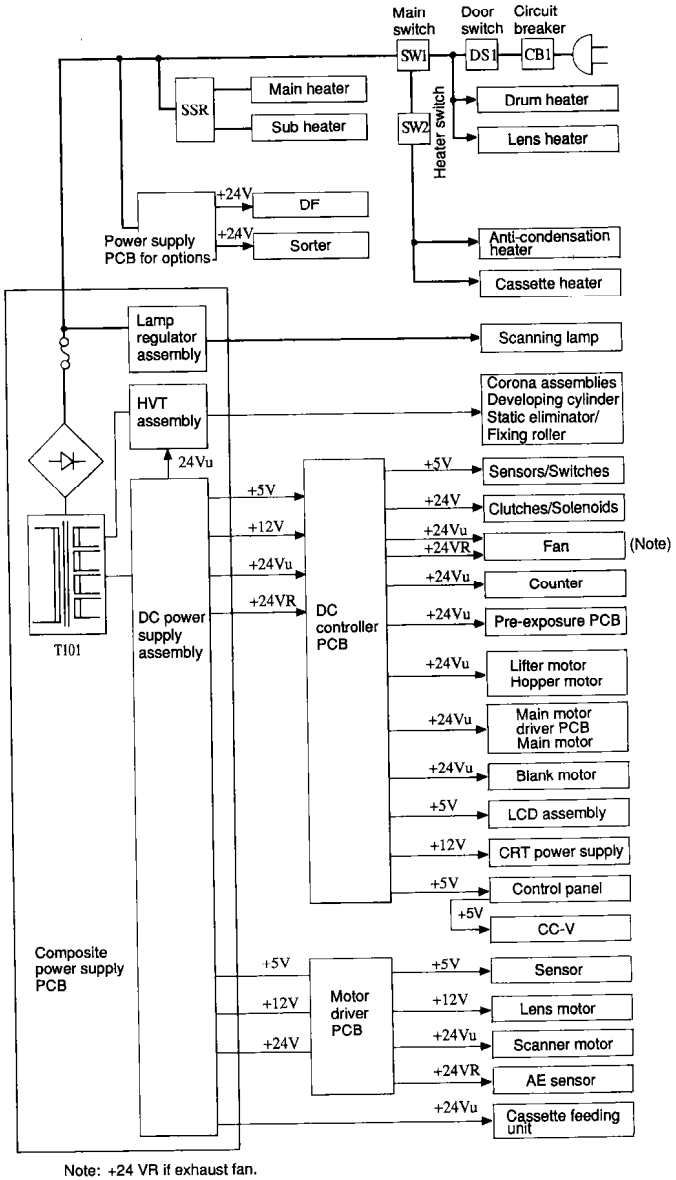
# V. POWER SUPPLY

## A. Outline of Power Supply System




Note: +24 VR if exhaust fan.

**Figure 3-501**

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## B. Power Supply Circuit

AC power is supplied to the composite power supply PCB and other loads when the door switch (DS1) and POWER switch are turned on. For auto power-off, the DC controller circuit turns off the POWER switch.

The composite power supply PCB is used to provide +24 VR, +24 VU, +12 V, and +5 V. The +24 VR output assumes +17 V during the standby period. However, the output is kept at +24 V when loads are operated in service mode.

The power supply PCB for options provide 24V power to the DF and sorter.

The DC power supply to the DC controller circuit is cut when the door switch or the POWER switch is turned off; a lithium battery (BAT101) is used to back up the RAM on the DC controller PCB.

**Reference:**

The tolerances applicable to DC power during copying operation are as follows:

- +24 VR ±3%
- +24 VU ±10%
- +12V ±5%
- +5 V ±5%

**Note:**
Replace the lithium battery only with the one listed in the Parts Catalog.
Use of a different battery may present a risk of fire or explosion.
The battery may present a fire or chemical burn hazard if mistreated. Do not recharge, disassemble, or dispose of it in fire.
Keep the battery out of reach of children and discard any used battery promptly.

## C. Protection Mechanism for Power Supply Circuit

Both composite power supply PCB and power supply PCB for options are equipped with an overcurrent detection circuit which becomes activated to stop the output when a short circuit occurs because of an error.

When the output is stopped, open the front door to turn off the door switch; then, correct the load, and turn on the door switch once again to return the output. Do not, however, repeat shorting and resetting operations; otherwise, the built-in fuse can blow.


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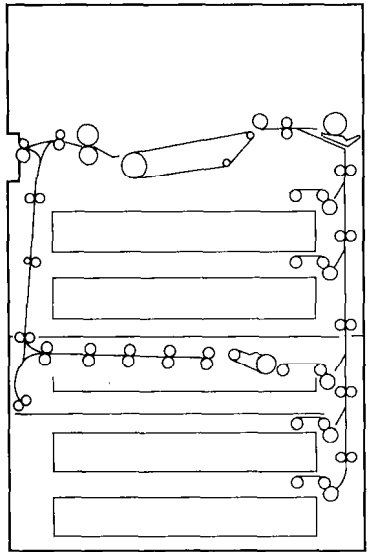
# VI. CASSETTE FEEDING UNIT

## A. Outline

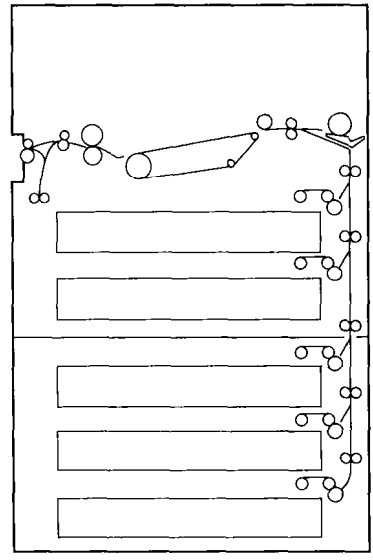
The copier is designed to accommodate any of four types of cassette feeding units: duplexing double-cassette feeding unit, duplexing one-cassette feeding unit, three-cassette feeding unit, and one-cassette feeding unit.

Here, discussions are limited to the duplexing two-cassette feeding unit and three-cassette feeding unit.

Figure 3-601 shows two diagrams of the copier placed on a duplexing two-cassette feeding unit and a three-cassette feeding unit.



Duplexing Two-Cassette Feeding Unit



Three-Cassette Feeding Unit

**Figure 3-601**

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## B. Outline of Electrical Circuitry

The same controller PCB is used to control the duplexing two-cassette feeding unit and the three-cassette feeding unit.

On the controller PCB, specific connectors must be used to control pick-up and feeding operations from each cassette holder.

The delivery vertical path assembly attached at time of installing the duplexing two-cassette feeding unit is controlled by the copier's DC controller PCB.

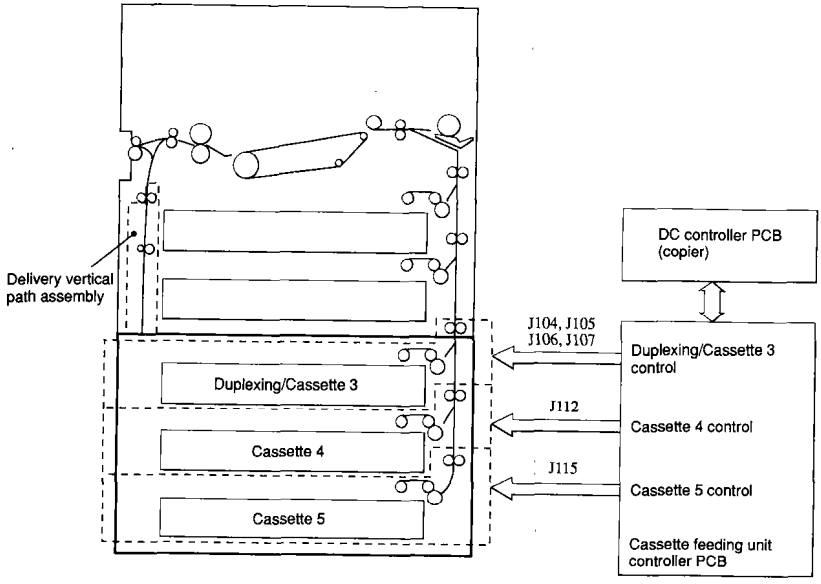


**Figure 3-602**


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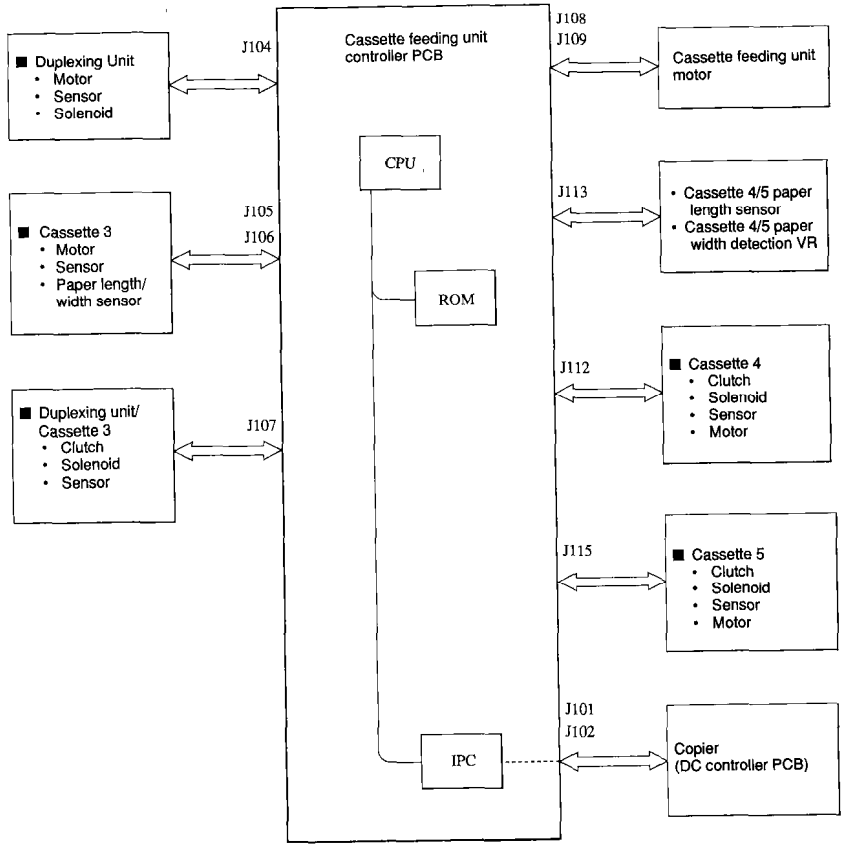


**Figure 3-603**

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# C. Inputs to and Outputs from the Cassette Feeding Unit Controller

Inputs/Outputs of Cassette Feeding Unit Controller (J108, J113)

- Duplexing Two-Cassette/Three-Cassette Feeding Unit Common Connectors

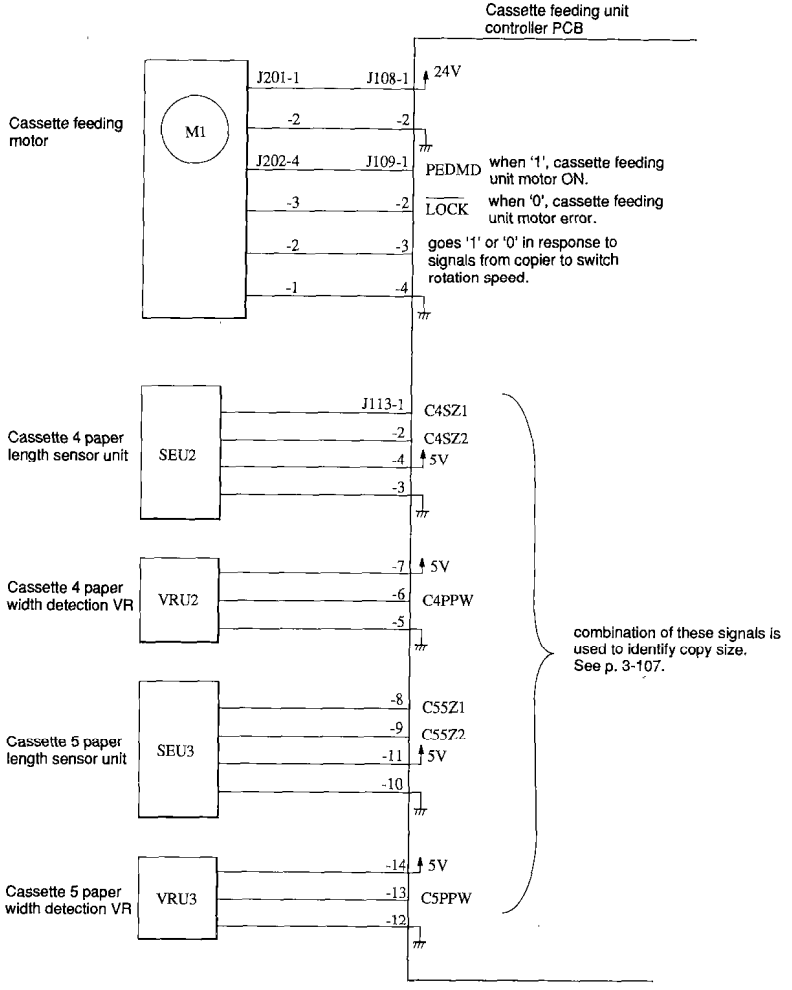


**Figure 3-604**


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Inputs/Outputs of Cassette Feeding Unit Controller (J112)

- Duplexing Two-Cassette/Three-Cassette Feeding Unit Common Connectors

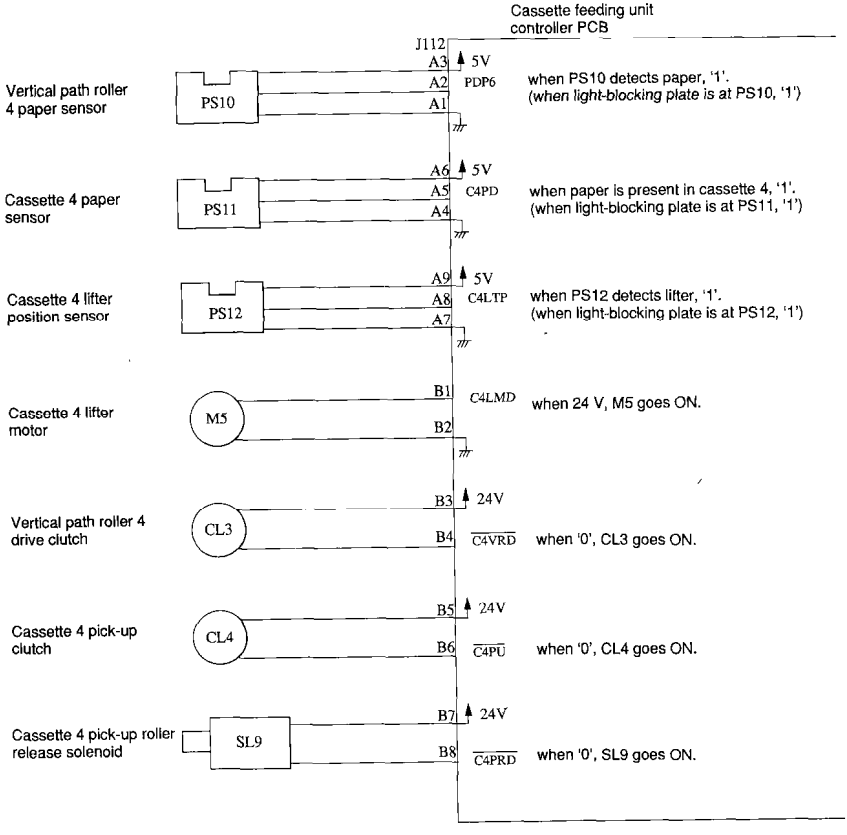


**Figure 3-605**

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Inputs/Outputs of Cassette Feeding Unit Controller (J114)

- Duplexing Two-Cassette/Three-Cassette Feeding Unit Common Connectors

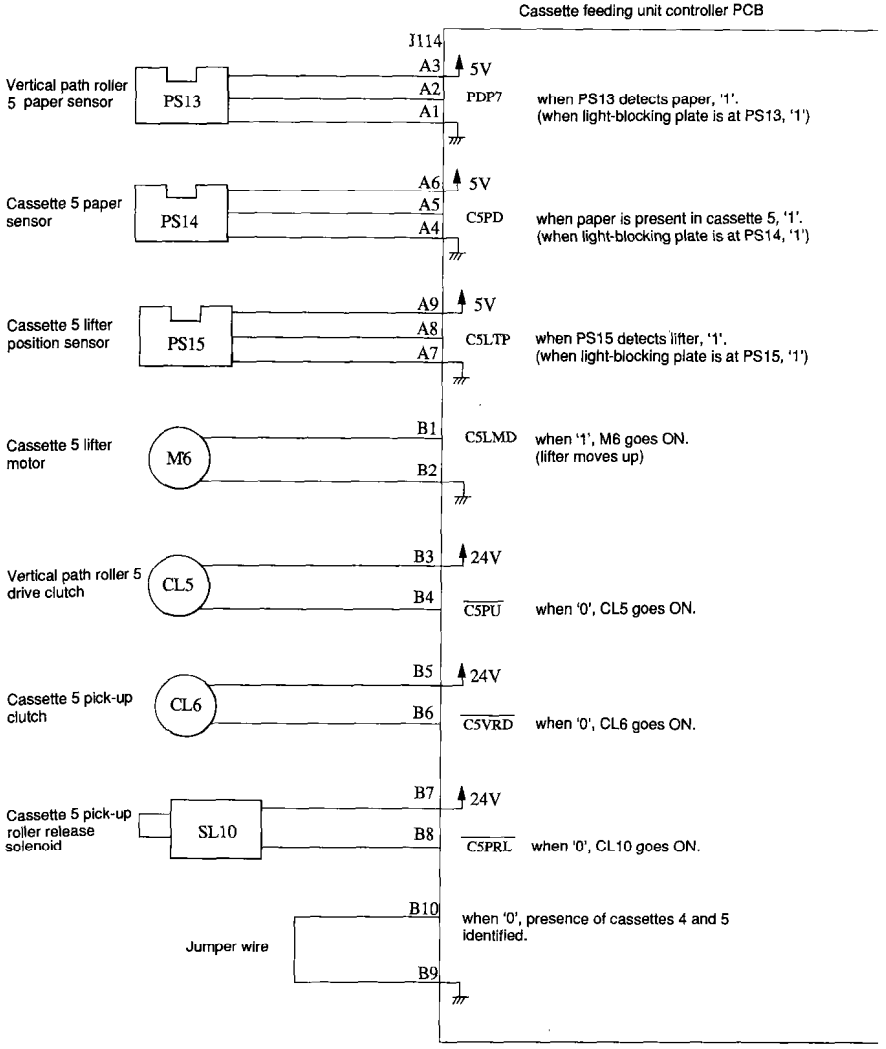


**Figure 3-606**


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Inputs/Outputs of Cassette Feeding Unit Controller (J103)
- Duplexing Two-Cassette Feeding Unit Special Connector

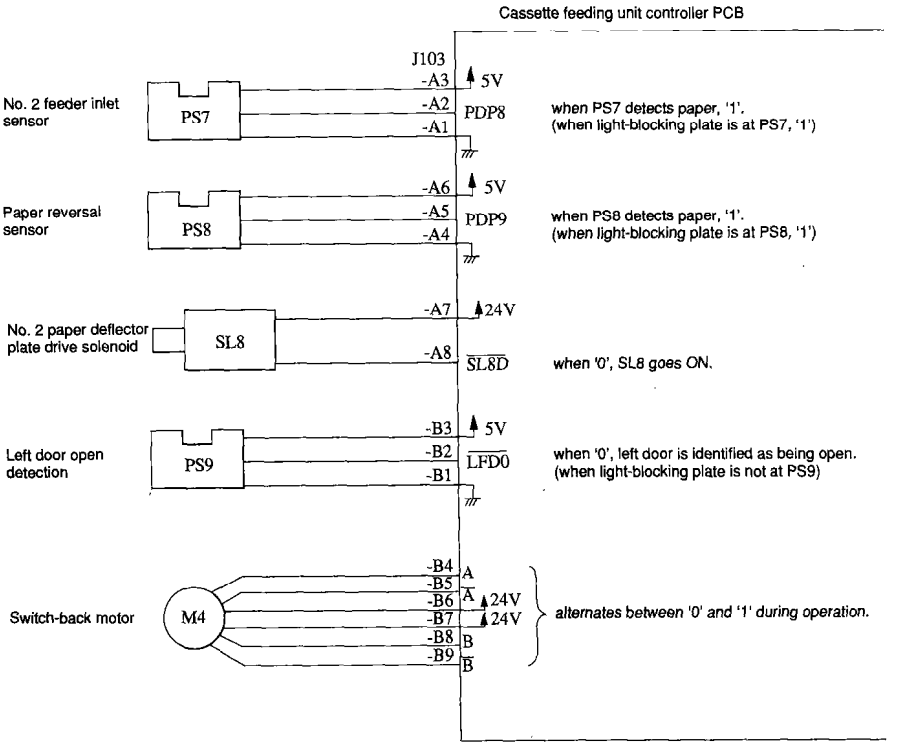


**Figure 3-607**

Inputs/Outputs of Cassette Feeding Unit Controller (J104)

- Duplexing Two-Cassette Feeding Unit Special Connector

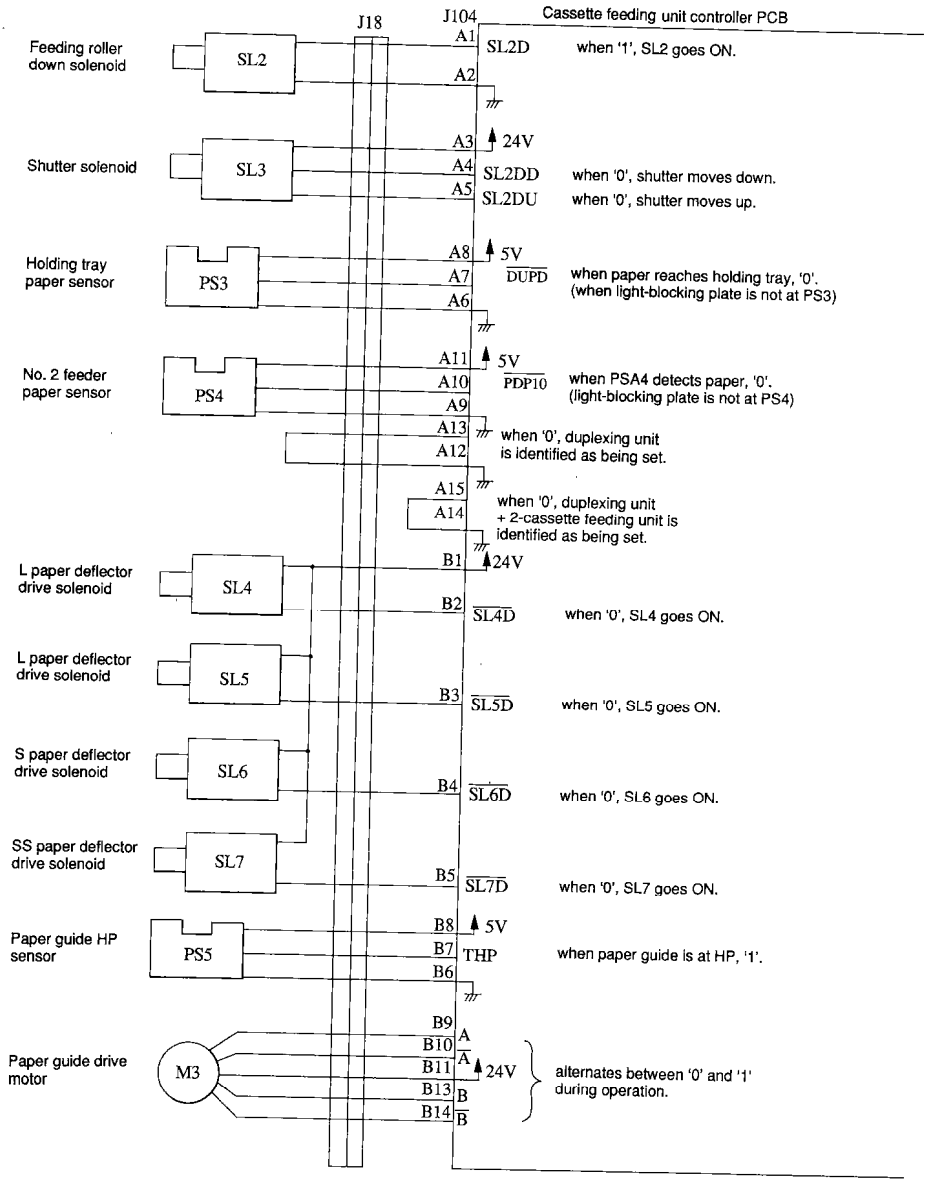


**Figure 3-608**



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Inputs/Outputs of Cassette Feeding Unit Controller (J107)

- Duplexing Two-Cassette/Three-Cassette Feeding Unit Common Connectors

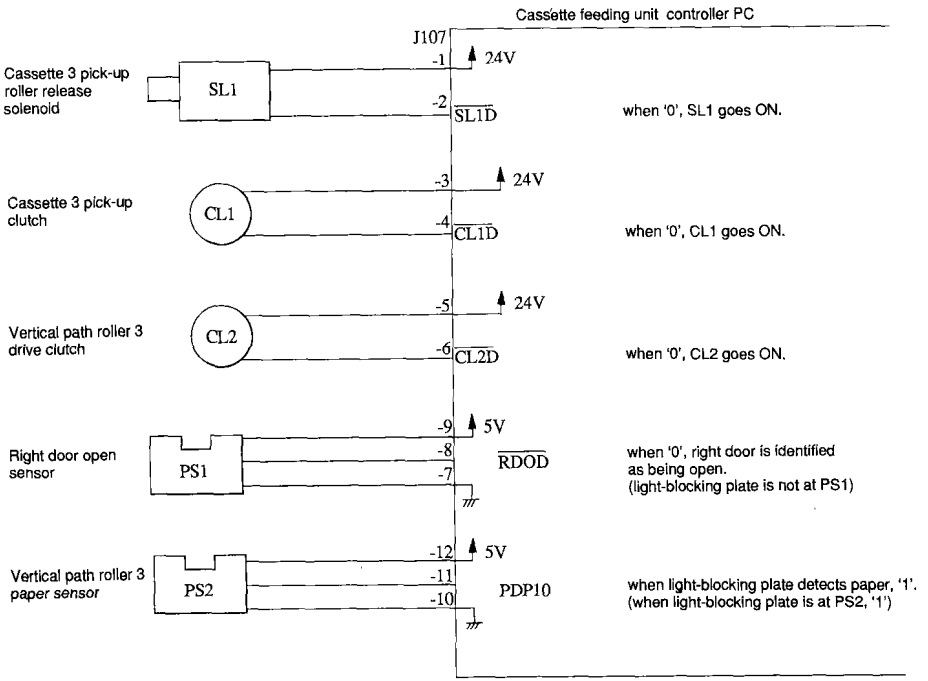


**Figure 3-609**

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Inputs/Outputs of Cassette Feeding Unit Controller (J105, J106)

- Three-Cassette Feeding Unit Special Connector

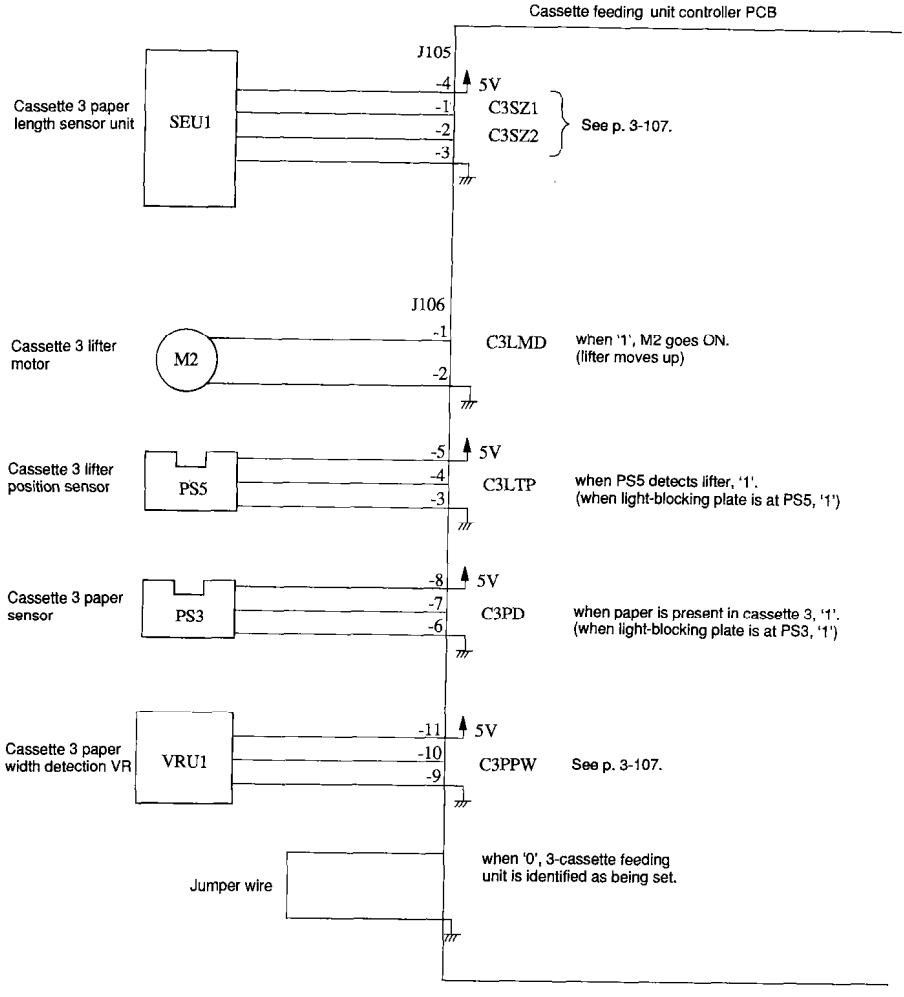


**Figure 3-610**


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# D. Cassette Feeding Unit Motor Control Circuit

## 1. Outline

Figure 3-611 shows the circuit that controls the cassette feeding motor (M1), and the circuit has the following functions:

① turns on and off the cassette feeding motor.
② maintains the cassette feeding unit motor constant.

The cassette feeding unit motor (M1) is a DC motor with a built-in clock pulse generator. When the motor rotates, clock pulses (MMCLK) corresponding to the revolution of the motor are generated. The speed control circuit maintains the revolution of the cassette feeding unit motor (M1) by matching the frequency of these clock pulses and the frequency of the reference signals.

## 2. Mechanism

When the cassette feeding motor dive signal (PEDMD) from the cassette feeding unit controller circuit goes '1', the motor driver drive circuit turns on, thereby rotating the cassette feeding unit motor at a specific speed.

The motor driver PCB sends the constant speed signal (LOCK≈1) to the cassette feeding controller PCB while the cassette feeding motor is rotating at a specific speed; the LOCK signal goes '0' if the rotation of the motor surfers from fluctuations for some reason.

When the LOCK signal goes '0', the copier stops operation, and indicates 'E901' on its control panel.

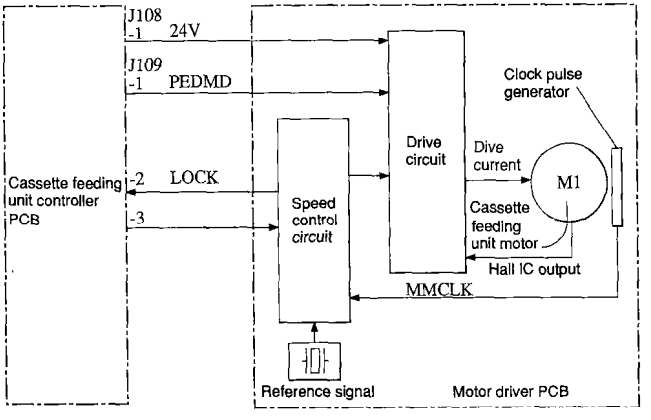


**Figure 3-611**

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# E. Duplexing Unit

## 1. Outline of the Duplexing Unit

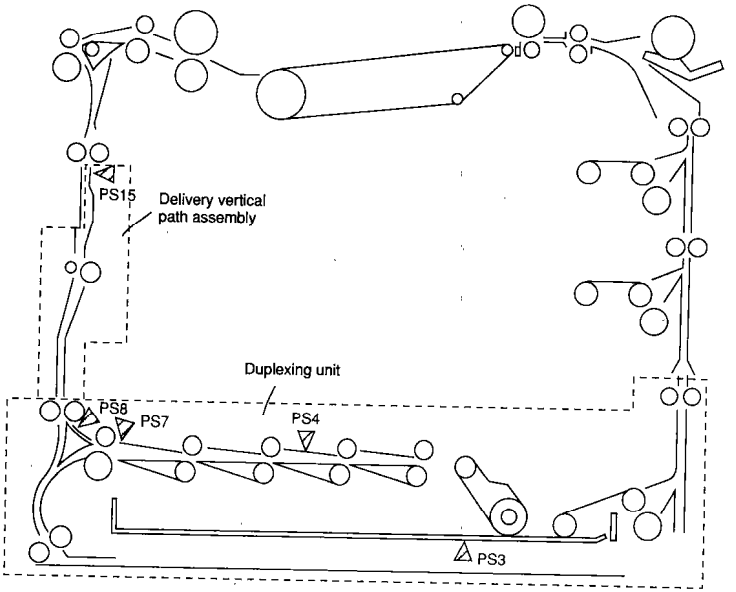


Figure 3-612

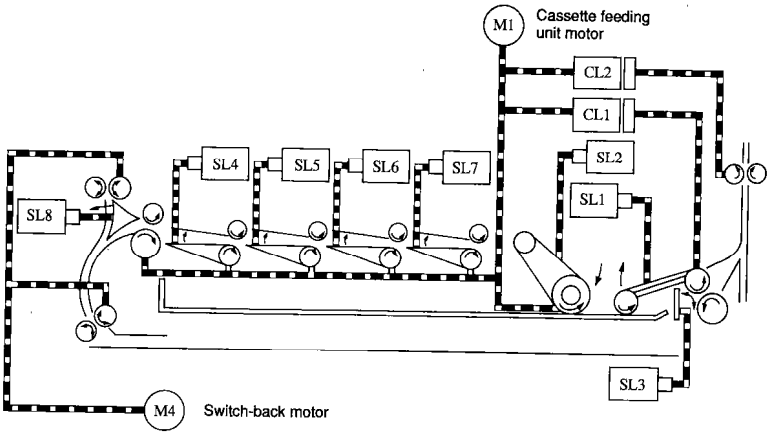


Figure 3-613



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## 2. Mechanism of Holding Tray

### a. Outline

The copy paper from the cassette or the multifeeder is sent to the delivery vertical path assembly by the No. 1 paper deflector after fixing; the paper is then sent to the No. 2 feeding assembly inside the cassette feeding unit.

In the No. 2 feeding assembly, the four paper deflectors are used to change the paper path to suit the length of the copy paper, thereby correctly stacking sheets of paper on the holding tray.

### b. Overlay Copying (1st copying)

The paper path for the first copying when making an overlay copy is formed by driving the copier's No. 1 paper deflector and the cassette feeding unit's No. 2 paper deflector.

The pick-up roller inside the duplexing unit moves up, and the stop plate shifts up to wait for the paper.

When the paper reaches the holding tray, the feeding roller moves down to butt the paper against the stop plate. When the last sheet has been stacked, the stop plate shifts down, and the pick-up roller moves down to the top sheet of the stack.

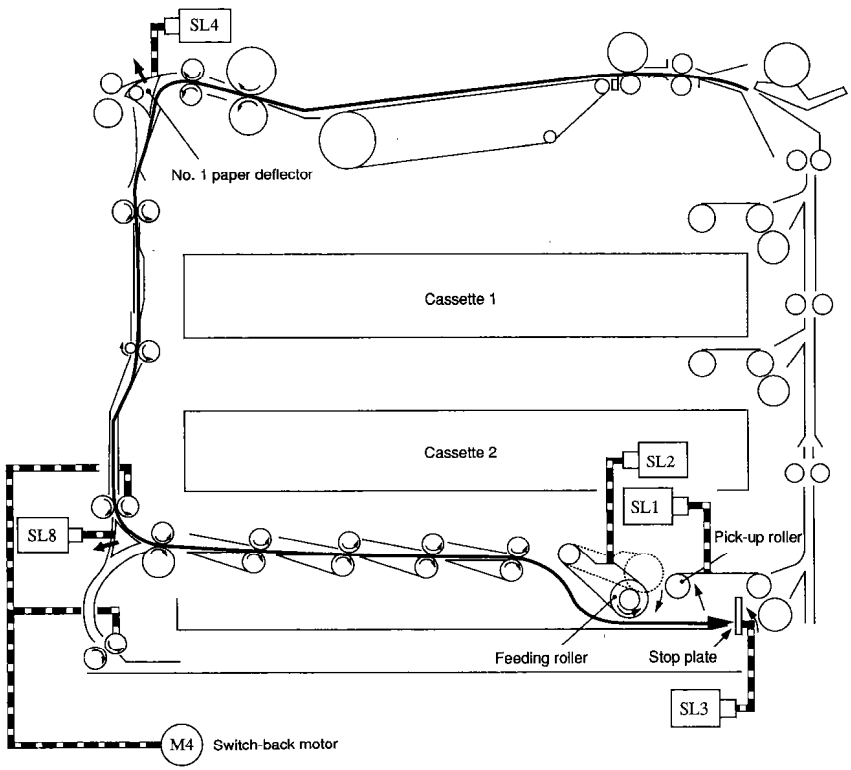


Figure 3-614

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### c. Sequence of Operations (1st copying)

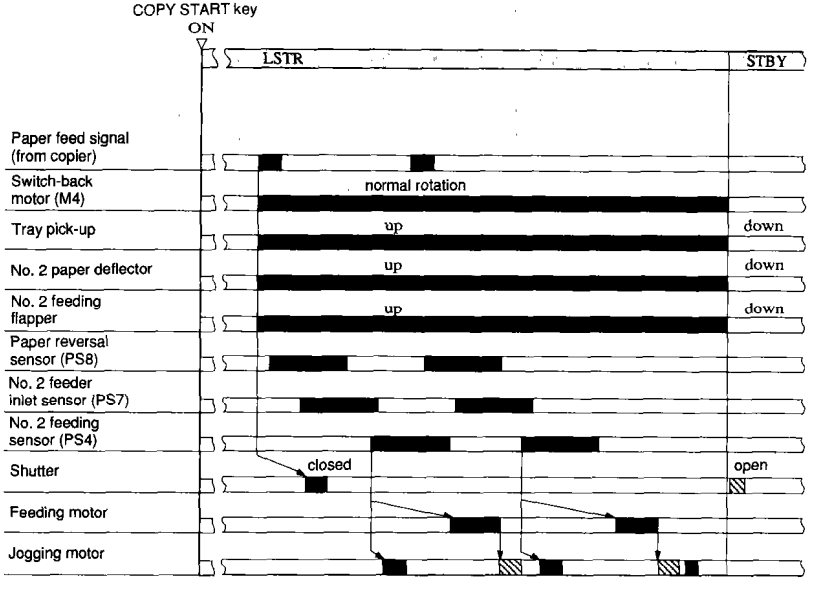


**Figure 3-615**


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### d. Two-Sided Copying (1st side)

When copying on the first side of a two-sided copy, the copier's No. 1 paper deflector shifts up to move the paper to the paper reversing assembly.

As soon as the reversing roller starts to move in reverse, the pick-up roller moves up and the stop plate shifts up to wait for the paper.

When the paper reaches the holding tray, the feeding roller moves down to butt the paper against the stop plate. When the last sheet has been stacked, the stopper plate shifts down and the pick-up roller moves down to the top sheet of the stack.

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### e. Making Two-Sided Copies (1st side)

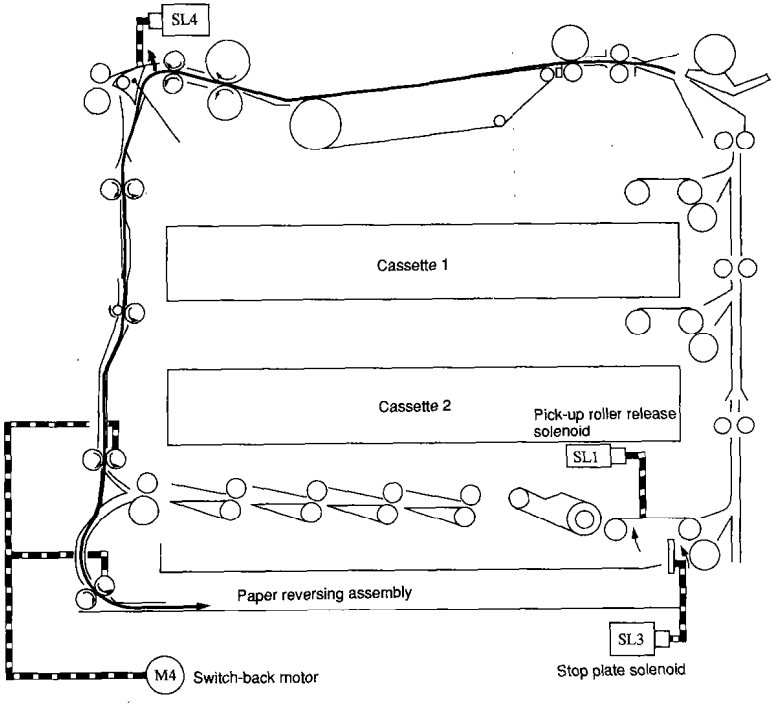


**Figure 3-616**

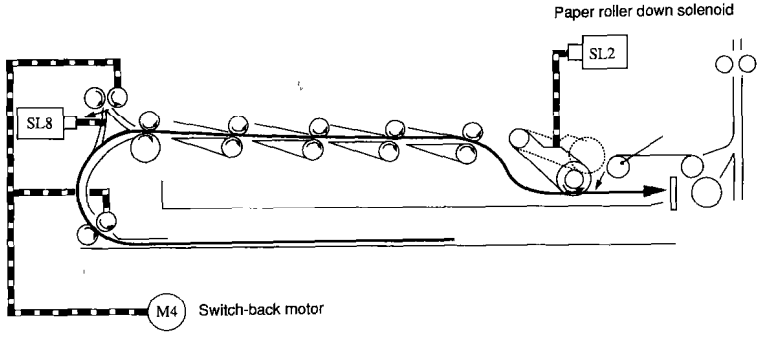


**Figure 3-617**


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### f. Sequence of Operations (1st side of two-sided copy)

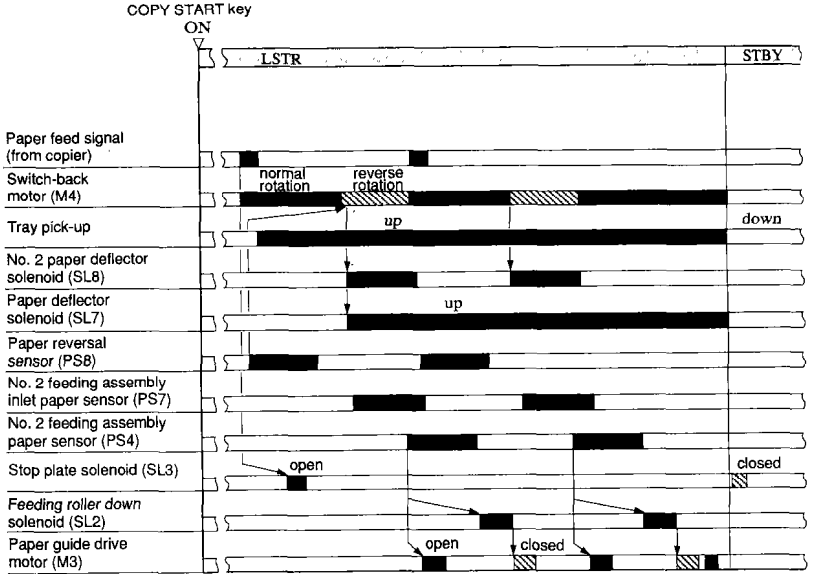


*Figure 3-618*

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### g. Changing the Paper Path in the No. 2 Feeding Assembly

When copying on the first side of a two-sided or overlay copy, the paper path in the No. 2 feeding assembly is changed to suit the copy size.

As many as five paths may be formed using four paper deflectors.

Each paper deflector is driven by its respective solenoid.

| Ref. No. | Copy length | Copy size | Paper deflector drive solenoid | | | |
|---|---|---|---|---|---|---|
| | | | SL4 | SL5 | SL6 | SL7 |
| ① | 443.83mm<br>390.57mm | 11" x 17"<br>A3 | ON | OFF | OFF | OFF |
| ② | 368.92mm<br>315.66mm | B4<br>LGL | OFF | ON | OFF | OFF |
| ③ | 299.58mm<br>246.32mm | A4R<br>LTR-R<br>B5R | OFF | OFF | ON | OFF |
| ④ | 231.54mm<br>178.28mm | LTR<br>A4<br>B5 | OFF | OFF | OFF | ON |
| ⑤ | 163.50mm<br>128.15mm | A5<br>STMT | OFF | OFF | OFF | OFF |

**Table 3-601**

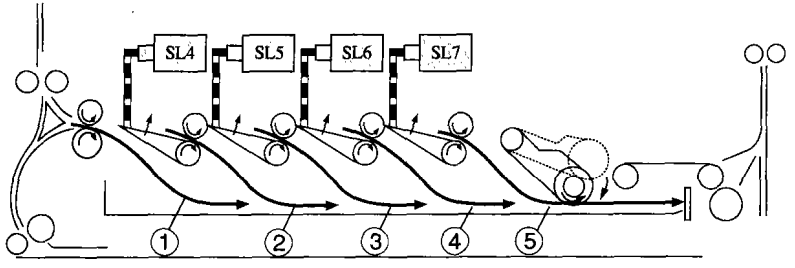


**Figure 3-619**


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**h. Paper Guide**

• Outline

The paper guide is used to guide the side of the stack of copy paper placed on the holding tray, thereby preventing skew movement or jams.

The paper guide is moved so that it butts against the edge of the stack of copy paper each time a sheet is fed.

• Mechanism of Paper Guide

When the COPY START key is pressed in two-sided/overlay mode, the paper guide drive motor (M3) starts to rotate in reverse to move the paper guide into the direction of the arrow.

The motor stops when the light-blocking plate of the paper guide blocks the home position sensor (PS5).

Next, the cassette feeding unit's controller PCB generates pulses corresponding to the copy size to the motor (M3).

The motor (M3), in response, moves the paper guide to suit the copy size. The motor (M3) then starts to rotate in reverse to stop the paper guide at a point about 6 mm from the edge of the copy paper (one side) to wait for the copy paper.

When the copy paper reaches the holding tray, the motor (M3) starts to rotate in normal direction, moving the guide plate by 6 mm, and in reverse, moving the guide plate by 6 mm again, while keeping the sheets in order.

When the last copy reaches the holding plate, the motor (M3) rotates in normal and reverse directions to wait for copying on the second side.

While the second side is being processed, the motor (M3) remains stationary, standing by for copying on the first side in the next copying cycle.

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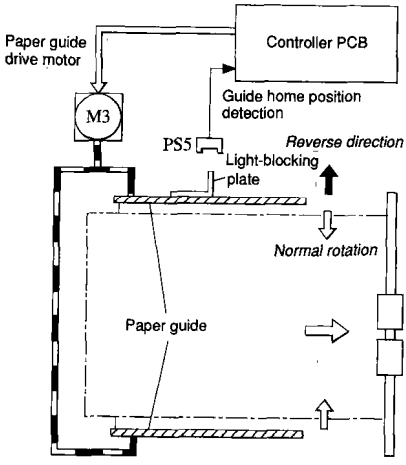


Figure 3-620 Tray (top view)

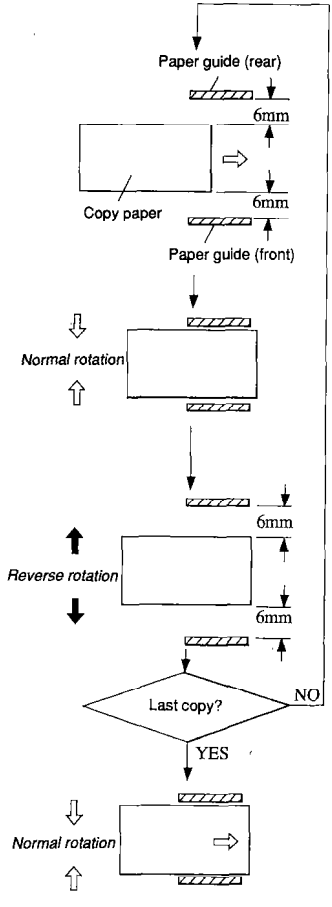


Figure 3-621 Keeping the Sheets in Order


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## 3. Pick-Up from Holding Tray

### a. Outline

When making a two-sided/overlay copy, copy paper is picked up from the holding tray.

When the COPY START key is pressed, the two-sided pick-up clutch (CL1) turns on, thereby transmitting the drive of the cassette feeding motor (M1) to the pick-up roller to pick up copy paper. After pick-up, the pick-up roller moves from the paper by the work of the pick-up roller release solenoid (SL1).

The feeding roller and the separation roller work together to ensure that no more than one sheet of paper is fed to the copier's vertical path assembly.

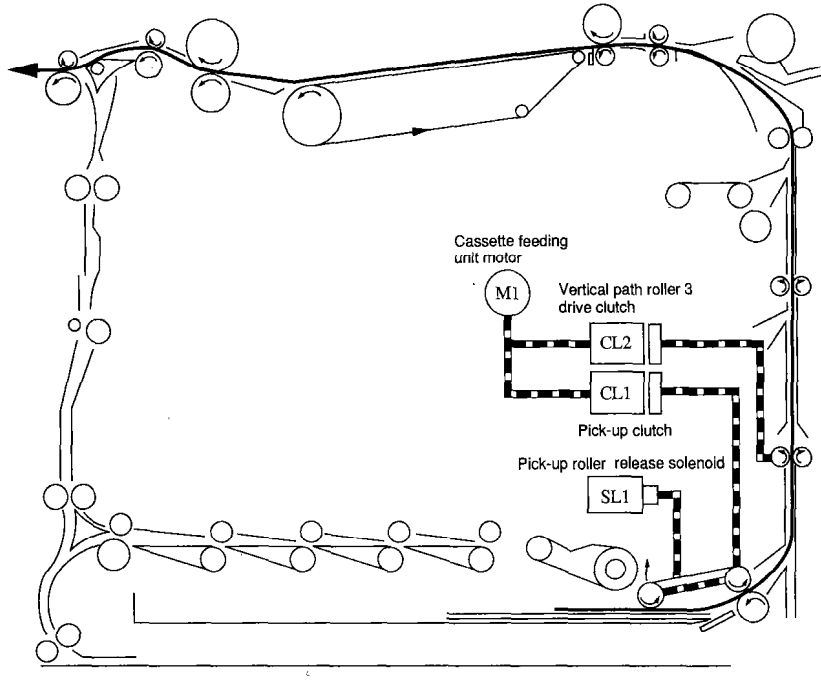


Figure 3-622

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## b. Sequence of Operations

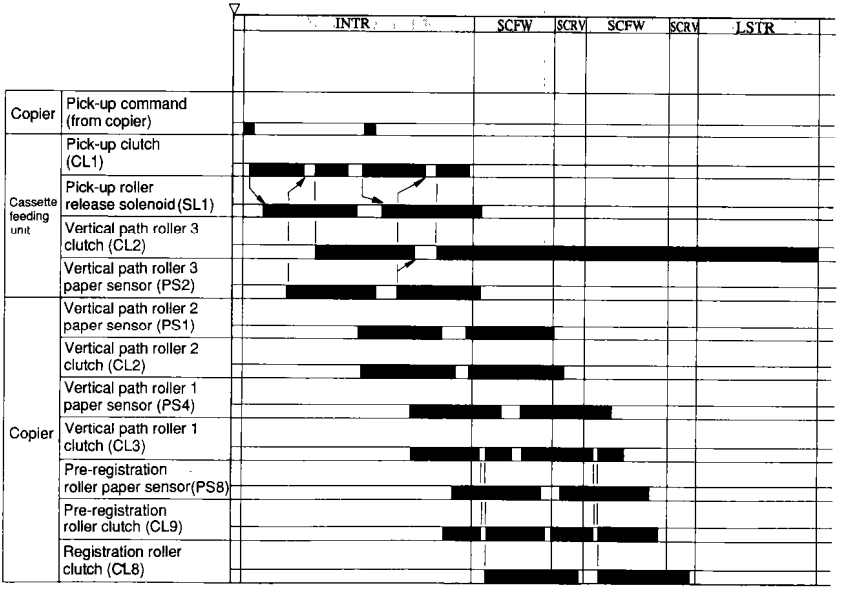


**Figure 3-623**


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# F. Pick-Up from Cassette

## 1. Operation

The copy paper inside the cassette is lifted by the lifter and remains in contact with the pick-up roller.

When the pick-up clutch (CL1, CL4, CL6) turns on, the pick-up roller starts to rotate to feed copy paper. Then, the pick-up roller release solenoid (SL1, SL9, SL10) turns on to move the pick-up roller from the paper.

The copy paper is then sent to the paper path by the work of the feeding roller and the separation roller; thereafter, the copy paper is moved inside the copier by the vertical path roller.

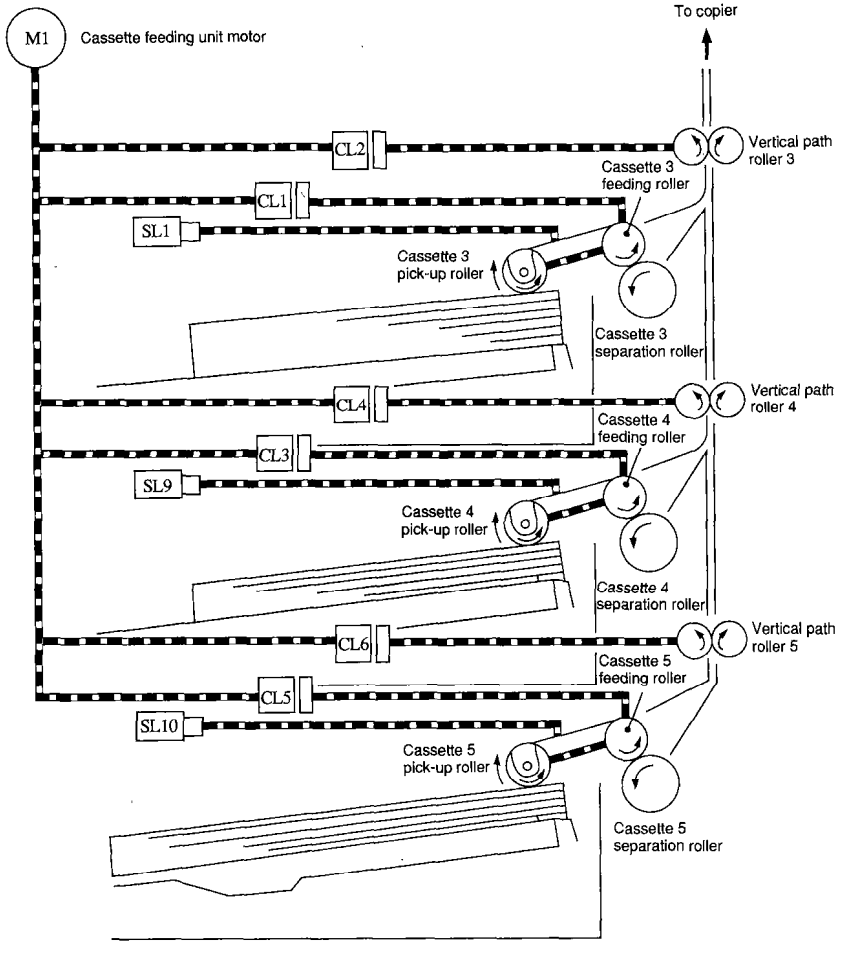


**Figure 3-624 (Three-Cassette Feeding Unit)**

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## 2. Sequence of Pick-Up Operations

① Cassette 3, A4, 2 Copies

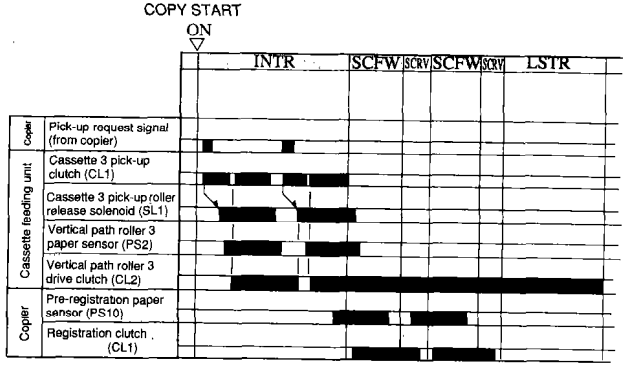


**Figure 3-625**

② Cassette 4, A4, 2 Copies

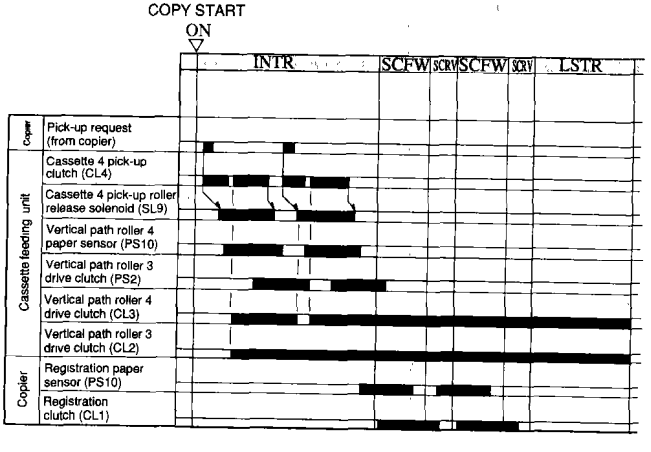


**Figure 3-626**


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③ Cassette 5, A4, 2 Copies

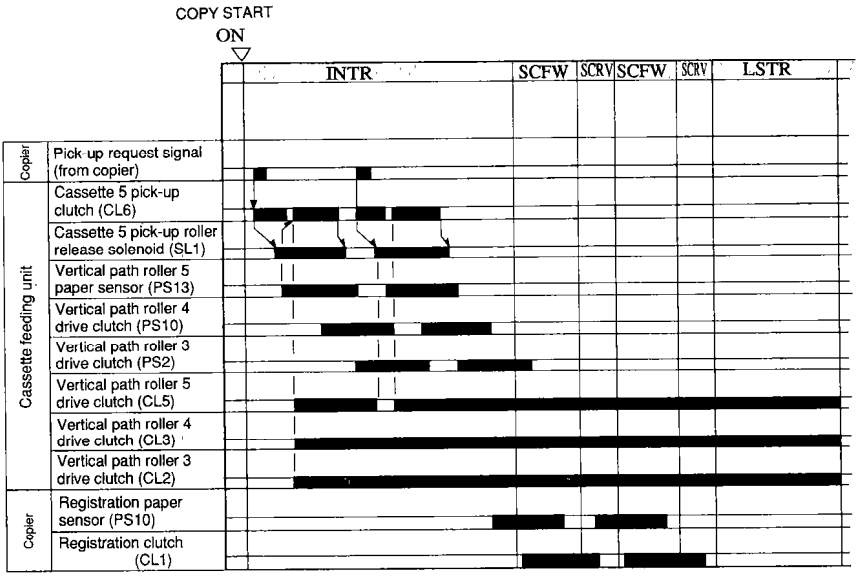


**Figure 3-627**

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## 3. Movement of Cassette Lifter

When the cassette is slid into the copier, the pick-up roller lowers, and the light-blocking plate leaves the lifter position sensor (PS5, PS12, PS15), causing the lifter motor (M2, M5, M6) to turn on and the lifter to move up. The lifter motor stops when the lifter position sensor (PS5, PS12, PS15) detects the top sheet of the paper stack on the lifter.

When copy paper runs out and the paper detecting spacer attached to the pick-up roller shaft drops, the paper detecting lever leaves the paper sensor (PS3, PS11, PS14), causing the copier to indicate the ADD PAPER message on its display.

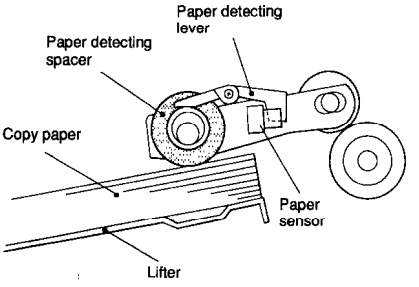


**Figure 3-628**

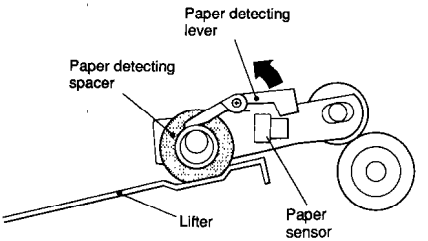


**Figure 3-629**

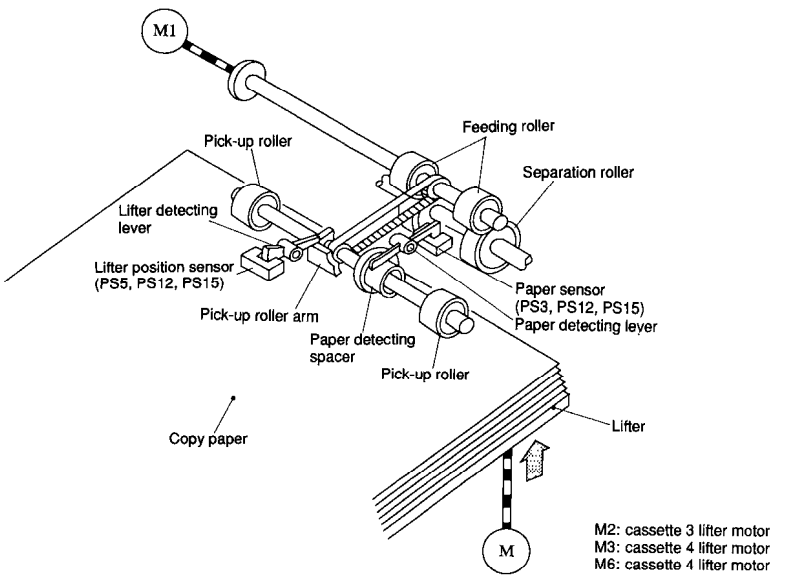


**Figure 3-630**


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## 4. Identifying the Size of Copy Paper

### a. Outline

The size of the copy paper inside the cassette is identified by the paper size sensors attached to the rear of the cassette holder.

When the cassette is slid inside the cassette holder, the paper size sensors are pushed by the bosses on the cassette, thereby generating outputs to represent the width and the length of the copy paper. Based on the combinations of the width and the length outputs, the copier identifies the size of the copy paper and, at the same time, decides on when to reverse the scanner and how to control blank exposure.

The bosses that press the paper size sensors are linked to the guide inside the cassette, and are positioned when the guide is moved to suit the copy paper.

### b. Identifying the Size of Copy Paper

The copy paper length sensor consists of two photointerrupters, and the length of copy paper is identified based on the combination of the outputs of the two.

The copy paper width sensor, on the other hand, is a variable resistor, and the width of copy paper is identified based on the resistance generated by the resistor.

Figure 3-631 shows the relationship between the paper width and the output of the variable resistor. For this reason, you must enter the default settings whenever you have replaced the sensors or the DC controller PCB.

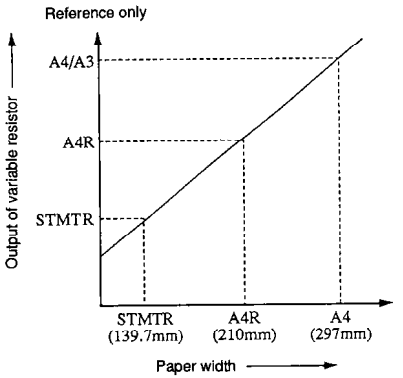


**Figure 3-631**

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### c. Paper Sizes

The microcomputer decides on a specific paper size according to the following table using the inputs of paper width and length.

| Paper length sensor / Paper width sensor (slice level: mm) | PS108/ PS108/ PS110 | PS105/ PS107/ PS109 | PS108/ PS108/ PS110 | PS105/ PS107/ PS109 | PS108/ PS108/ PS110 | PS105/ PS107/ PS109 | PS108/ PS108/ PS110 | PS105/ PS107/ PS109 |
|---|---|---|---|---|---|---|---|---|
| Signal | SZ2 | SZ1 | SZ2 | SZ1 | SZ2 | SZ1 | SZ2 | SZ1 |
| ON/OFF | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 |
| 288.5 | A4 | | — | | A3 | | — | |
| 273.7 | (G4) | | — | | 11"×17" | | — | |
| 261.8 | (G1) | | — | | — | | — | |
| 238.0 | B5 | | — | | B4 | | — | |
| 212.9 | STMT | | LTRR | | LGL | | (G2) | |
| 206.6 | A5 | | A4R | | — | | (G3) | |
| 196.6 | G-LTRR | | — | | — | | | |
| 186.0 | K-LGLR | | — | | — | | — | |
| 165.2 | B5R | | — | | — | | — | |
| 144.1 | A5R | | — | | — | | — | |
| | STMTR | | — | | — | | — | |

**Table 3-602**

Table 3-603 shows paper sizes grouped for identification and that can be set in service mode. The sizes with an asterisk represent default settings used at time of shipment from the factory.

| Group | Size | |
|---|---|---|
| G1 | * | G-LTR<br>K-LGL |
| G2 | * | FOOLSCAP<br>OFFICIO<br>E-OFFI<br>A-LGL<br>A-OFFI |
| G3 | * | G-LGL<br>FOLIO<br>AUS-FLS |
| G4 | * | LTR<br>A-LTR |

**Table 3-603**


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• Paper Sizes That May Be Used for the Copier

| Paper | Notation | Size (vertical × horizontal; mm) |
|---|---|---|
| A3 | A3 | (297±1) × (420±1) |
| A4R | A4R | (210±1) × (297±1) |
| A4 | A4 | (297±1) × (210±1) |
| A5 | A5 | (210±1) × (148.5±1) |
| A5R | A5R | (148.5±1) × (210±1) |
| B4 | B4 | (257±1) × (364±1) |
| B5R | B5R | (182±1) × (257±1) |
| B5 | B5 | (257±1) × (182±1) |
| 11"×17" | 11×17 | (279±1) × (432±1) |
| LETTER R | LTRR | (216±1) × (297±1) |
| LETTER | LTR | (297±1) × (216±1) |
| STATEMENT | STMT | (216±1) × (139.5±1) |
| STATEMENT R | STMTR | (139.5±1) × (216±1) |
| LEGAL | LGL | (216±1) × (356±1) |
| KOREAN LEGAL | K-LGL | (265±1) × (190±1) |
| KOREAN LEGAL R | K-LGLR | (190±1) × (265±1) |
| FOOLSCAP | FLSC | (216±1) × (330±1) |
| AUSTRALIAN FOOLSCAP | A-FLS | (206±1) × (337±1) |
| OFICIO | OFI | (216±1) × (317±1) |
| EQUADORAN OFICIO | E-OFI | (220±1) × (320±1) |
| BOLIVIAN OFICIO | B-OFI | (216±1) × (355±1) |
| ARGENTINE LETTER | A-LTR | (280±1) × (220±1) |
| ARGENTINE LETTER-R | A-LTRR | (220±1) × (280±1) |
| GOVERNMENT LETTER | G-LTR | (267±1) × (203±1) |
| GOVERNMENT LETTER-R | G-LTRR | (203±1) × (267±1) |
| ARGENTINE LEGAL | A-LGL | (220±1) × (340±1) |
| GOVERNMENT LEGAL | G-LGL | (203±1) × (330±1) |
| FOLIO | FOLI | (216±1) × (317±1) |
| ARGENTINE OFFICIO | A-OFI | (220±1) × (340±1) |

**Table 3-604**

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**G. Detecting Jams**

The copier is equipped with the following sensors to check the presence/absence and the movement of copy paper:

- vertical path roller 3 paper sensor (PS2)
- vertical path roller 4 paper sensor (PS10)
- vertical path roller 5 paper sensor (PS13)
- No. 2 feeder inlet paper sensor (PS7; duplexing unit)
- paper reversal sensor (PS8; duplexing unit)
- No. 2 paper sensor (PS4; duplexing unit)

The presence/absence of paper is checked by the presence/absence of paper over the sensors at such times as instructed by the microprocessor on the cassette feeding unit controller PCB.

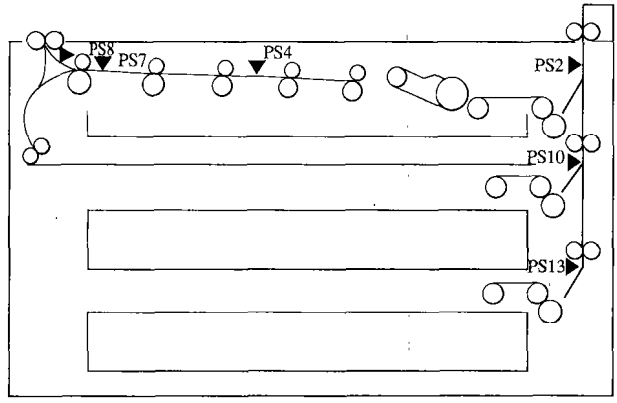


**Figure 3-632**


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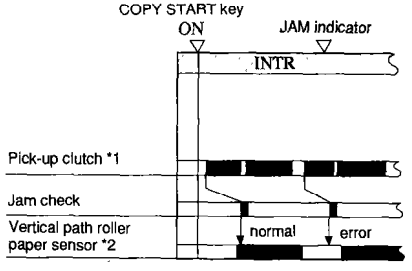
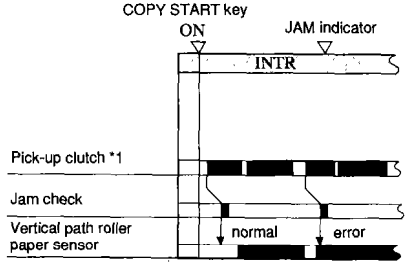
① Pick-Up Delay Jam




*1 cassette 3 pick-up clutch (CL1)
holding tray pick-up clutch (CL1)
cassette 4 pick-up clutch (CL4)
cassette 5 pick-up clutch (CL6)
*2 vertical path roller 3 paper sensor (PS2)
vertical path roller 4 paper sensor (PS10)
vertical path roller 5 paper sensor (PS13)

**Figure 3-633**

② Pick-Up Timing Jam




*1 cassette 3 pick-up clutch (CL1)
holding tray pick-up clutch (CL1)
cassette 4 pick-up clutch (CL4)
cassette 5 pick-up clutch (CL6)
*2 vertical path roller 3 paper sensor (PS2)
vertical path roller 4 paper sensor (PS10)
vertical path roller 5 paper sensor (PS13)

**Figure 3-634**

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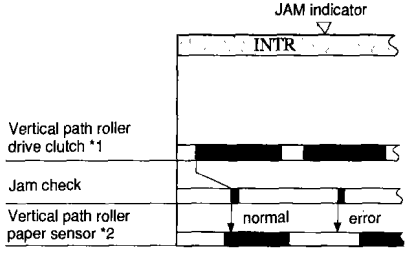
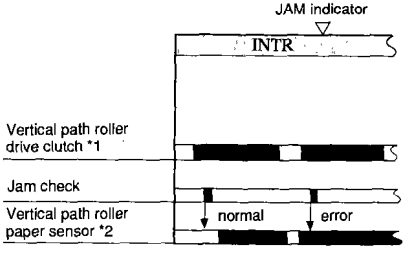
③ Vertical Path Roller 3, 4 Paper Sensor Delay Jam




*1 vertical path roller 5 drive clutch (CL5)
vertical path roller 4 drive clutch (CL3)
*2 vertical path roller 4 paper sensor (PS10)
vertical path roller 3 paper sensor (PS2)

**Figure 3-635**

④ Vertical Path Roller 3, 4 Paper Sensor Timing Jam




*1 vertical path roller 5 drive clutch (CL5)
vertical path roller 4 drive clutch (CL3)
*2 vertical path roller 4 paper sensor (PS10)
vertical path roller 3 paper sensor (PS2)

**Figure 3-636**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⑤ Vertical Path Roller 3 Stationary Jam

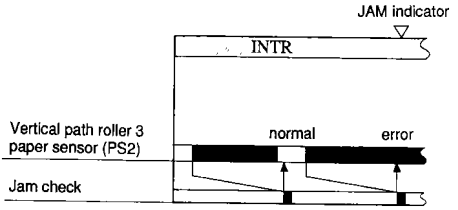


**Figure 3-637**

⑥ Two-Sided (first side), Paper Reversal Sensor (PS8) Delay Jam

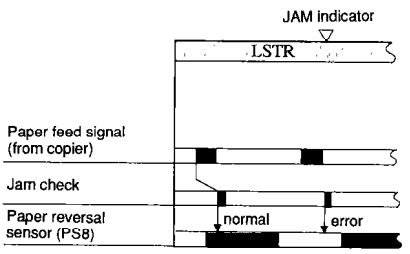


**Figure 3-638**

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⑦ Two-Sided (first side), No. 2 Feeder Inlet Paper Sensor (PS7) Delay Jam

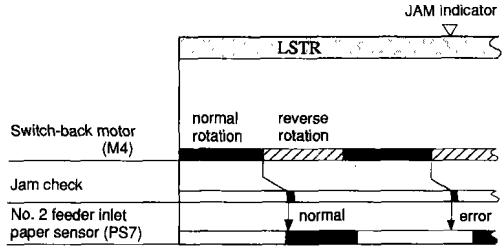


**Figure 3-639**

⑧ Overlay (first), No. 2 Feeder Inlet Paper Sensor (PS7) Delay Jam

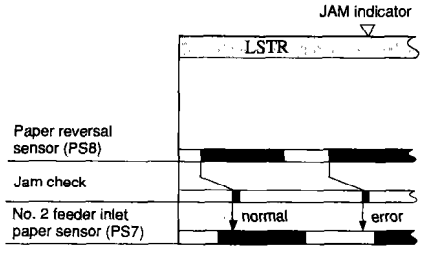


**Figure 3-640**


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⑨ No. 2 Feeder Paper Sensor (PS4) Delay Jam

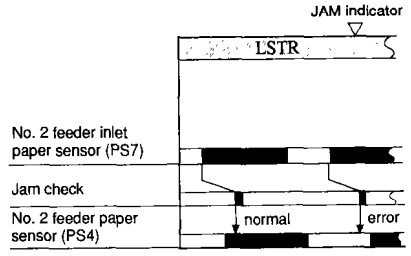


**Figure 3-641**

⑩ No. 2 Feeder Paper Sensor (PS4) Stationary Jam

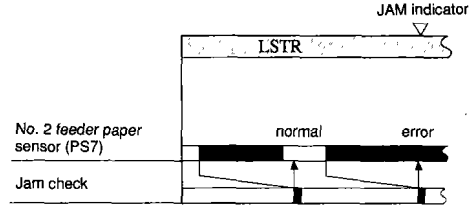


**Figure 3-642**

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# VII. SERVICE MODE

## A. Outline

The copier's service mode is classified into the following six:

| Item | Display | Description |
|---|---|---|
| *1* | DISPLAY | control display mode |
| *2* | I/O DISPLAY | I/O display mode |
| *3* | ADJUST | adjustment mode |
| *4* | FUNCTION | operation/inspection mode |
| *5* | OPTION | specifications settings mode |
| *6* | COUNTER | counter mode |

**Table 3-701**

Each mode in turn has several items you can select; refer to the message display as you make adjustments.

## B. Using Service Mode

1) Open the front door, and insert the door switch actuator. If you want to make checks while making copies (I/O display mode, for example), set the desired copy modes.
2) Press the service mode switch (SW 501) using a hex key.
   - The copier shows 'S' on its display to indicate that it has entered service mode.

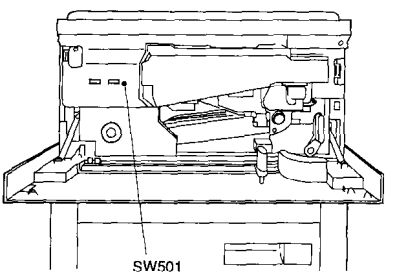


**Figure 3-701**

3) Enter the number of the desired mode (Table 3-701) using the [*] key and the numeric keypad; for example, [*] → [3] → [*].
4) Press the [▽] or [△] key to select the screen.
5) Make checks or adjustments.
6) Clear service mode.
   - Press the RESET key ( ⊂⊃ ) once to leave the mode.
   - Press the RESET key once again to clear service mode.
   - Note that service mode will be cleared when you switch off the copier or disconnect its power plug; however, opening the right door, delivery door, cassette feeding unit right door or left door will not cancel service mode.


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## C. Using Adjustment Mode and Specifications Settings Mode

Using adjustment mode and specifications settings mode, you can activate the copier's functions using the RAM on the DC controller PCB without resorting to variable resistors or switches.

Figure 3-702 is a copy of the label attached behind the copier's front cover. At the factory, each copier is adjusted, and the settings used are recorded in this label.

It is important that you record new settings on the label whenever you have replaced the DC controller PCB or reset the RAM or set new settings; be sure to record the same settings on the label attached to the RAM on the DC controller PCB.

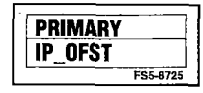


Figure 3-702

| | TYP | | | | TYP | | |
|---|---|---|---|---|---|---|---|
| LIGHT_5 | | | | BK_BELT | | | |
| AE_SLOP | | | | MF_LNGTH | | | |
| AE_LIGHT | | | | BOOK_ERA | | | |
| REGIST | | | | DOC_STOP | | | |
| LE_BLANK | | | | C1_STMTR | | | |
| FR_BLANK | | | | C1_A4R | | | |
| BK_BLANK | | | | C2_STMTR | | | |
| TE_BLANK | | | | C2_A4R | | | |
| BIAS | | | | C3_STMTR | | | |
| TRN_1 | | | | C3_A4R | | | |
| TRN_2DUP | | | | C4_STMTR | | | |
| TRN_2OVL | | | | C4_A4R | | | |
| APVC_STD | | | | C5_STMTR | | | |
| ATVC_STD | | | | C5_A4R | | | |
| PWR_OFST | | | | MF_A6R | | | |
| LMPVTUNE | | | | MF_A4R | | | |
| | | | | MF_A4 | | | |
| | | | | | | | |
| | | | | | | | |

Figure 3-702a

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## D. Control Display Mode (✳ 1 ✳)

- Select the screen using the ∧ or ∨ key.

```
✳ 1 ✳    DISPLAY

PAGE NEXT    : ∨ KEY
PAGE BEFORE  : ∧ KEY
```

Screen 3-1

- Screen No. 1

```
✳ 1 ✳    DISPLAY

FTMP  :  °C        LAMP  :  V
RTMP  :  °C        PV    :  V
AE    :            PC-M  :  µA
```

Screen 3-2

| Item | Description | Remarks |
|---|---|---|
| FTMP | surface temperature of the upper fixing roller (output of thermistor TH1) | °C |
| RTMP | temperature inside the machine (output of the thermal sensor on the DC controller PCB) | °C |
| AE | output of the AE sensor | 0 to 255 |
| LAMP | drive voltage for the scanning lamp | V |
| PV | application voltage for the primary charging roller | V |
| PC_M | primary application current for APVC control | µA |

Table 3-702


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• Screen No. 2

| ✳1✳ DISPLAY |
|---|
| DCMET_1 :<br>DCMET_2 :<br>DCMET_3 :<br>DCMET_4 : |

Screen 3-3

| Item | Description | Remarks |
|---|---|---|
| DCMET1 | output of document size sensor 1 | Turn on the copyboard cover open/close sensor (PS18) with the copyboard cover open; the output of the sensor detecting a document should change from '1' to '0'. |
| DCMET2 | output of document size sensor 2 | |
| DCMET3 | output of document size sensor 3 | |
| DCMET4 | output of document size sensor 4 | |

Table 3-703

AB INCH A

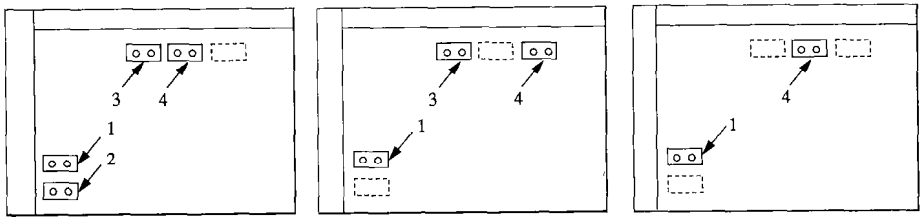


Figure 3-703

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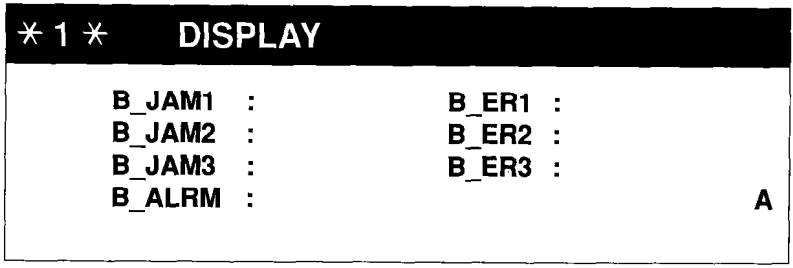
• Screen No. 3




Screen 3-4

| Item | Description | Remarks |
|---|---|---|
| B_JAM1<br>B_JAM2<br>B_JAM3 | indicates three histories of jam locations:<br>B_JAM1: most recent<br>B_JAM2: second recent<br>B_JAM3: third recent | See Table 3-705. |
| B_ER1<br>B_ER2<br>B_ER3 | indicates three histories of the results of copier self diagnosis:<br>B_ER1: most recent<br>B_ER2: second recent<br>B_ER3: third recent | See p. 3-173. |
| B_ALRM | indicates copier wrings. | See Table 3-706. |
| A | indicates types of E002. | See table 3-706a. |

Table 3-704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• **Details of Copier Jam Codes**

| Item | Description | Sensor |
|---|---|---|
| 0001 | vertical path 1 delay jam (cassette 1 pick-up delay) | PS6 |
| 0002 | vertical path 2 delay jam (cassette 2 pick-up delay) | PS7 |
| 0004 | pre-registration roller delay jam | PS9 |
| 0008 | separation delay jam | PS10 |
| 0010 | delivery delay jam | PS11 |
| 0020 | delivery vertical jam delay jam | PS14 |
| 0100 | vertical path 1 stationary jam (cassette 1 pick-up stationary) | PS6 |
| 0200 | vertical path 2 stationary jam (cassette 2 pick-up stationary) | PS7 |
| 0400 | pre-registration roller stationary jam | PS9 |
| 0800 | separation stationary jam | PS10 |
| 1000 | delivery stationary jam | PS11 |
| 2000 | delivery vertical path stationary jam | PS14 |

**Table 3-705**

• **Details of Copier Alarm Codes**

| Display | Description |
|---|---|
| 0001 | cassette 1 lifter fails to move up. |
| 0002 | cassette 2 lifter fails to move up. |

**Table 3-706**

• **Details of E002 (temperature)**

| Display in Service Mode | Temperature (measured) |
|---|---|
| 1 | 40 to 75 |
| 2 | 75 to 100 |
| 3 | 100 to 120 |
| 4 | 120 to 140 |
| 5 | 140 to 160 |
| 6 | 160 to 170 |
| 7 | 170 to 180 |
| 8 | 180 to 185 |
| 9 | 185 to 190 |

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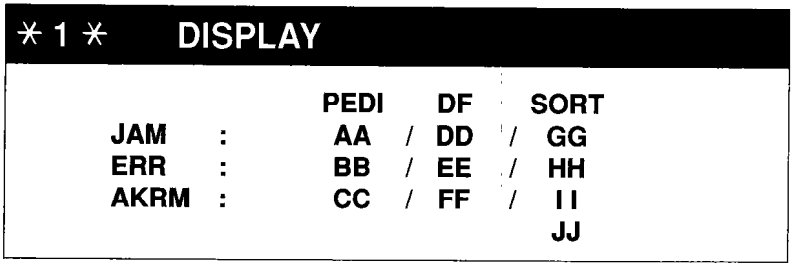
• Screen No. 4




Screen 3-5

| Item | | Description | Remarks |
|---|---|---|---|
| JAM | | gives a jam description. | |
| | AA | PEDI: jam in cassette feeding unit (Table 3-708) | |
| | DD | DF: jam in document pick-up system (Table 3-711) | |
| | GG | SORT: jam in sorter (Table 3-714) | |
| ERR | | gives results of self diagnosis (E) | |
| | BB | PEDI: self diagnosis of cassette feeding nit (Table 3-709) | |
| | EE | DF: self diagnosis of document pick-up system (Table 3-712) | |
| | HH | SORT: self diagnosis of sorter (Table 3-715) | |
| ALRM | | gives a warning description. | |
| | CC | PEDI: warning description for cassette feeding unit (Table 3-710) | |
| | FF | DF: warning description for document pick-up system (Table 3-713) | |
| | II | SORT: warning description for sorter (Table 3-716) | |
| | JJ | SORT: warning description for sorter (Table 3-717) | |

Table 3-707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• **Details of Cassette Feeding Unit Jam Codes (AA)**

| Display No. | Description | Sensor |
|---|---|---|
| 01 | cassette 5 pick-up delay | PS13 |
| 02 | cassette 5 pick-up timing | |
| 03 | cassette 4 pick-up delay | PS10 |
| 04 | cassette 4 pick-up timing | |
| 05 | cassette 3/duplexing unit delay | PS2 |
| 06 | cassette 3/duplexing unit timing | |
| 11 | vertical path roller 4 delay | PS10 |
| 12 | vertical path roller 4 timing | |
| 13 | vertical path roller 3 delay | PS2 |
| 14 | vertical path roller 3 timing | |
| 15 | vertical path roller 3 stationary | |
| 41 | paper reversal sensor delay | PS8 |
| 42 | No. 2 feeder inlet timing | PS7 |
| 43 | No. 2 feeder inlet delay | |
| 44 | No. 2 feeder inlet stationary | |
| 47 | No. 2 feeder delay | PS4/PS7 |
| 48 | No. 2 feeder stationary | PS4 |
| 49 | No. 2 feeder timing | |
| 82 | No. 2 feeder inlet stationary | |
| 84 | No. 2 feeder stationary | |

**Table 3-708**

• **Details of Cassette Feeding Unit Error Codes (BB)**

| Display No. | Description |
|---|---|
| 01 | E901 ON signal |
| 02 | E902 ON signal |

**Table 3-709**

• **Details of Cassette Feeding Unit Warnings (CC)**

| Display No. | Description |
|---|---|
| 01 | cassette 3, 4, and 5 lifter fails to move up. |

**Table 3-710**

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• **Details of DF Jam Codes (DD)**

| Display No. | Description | Model |
|---|---|---|
| 01 | document pulled out at time of pick-up | RF-ADF |
| 02 | delay jam by pick-up sensor | RF-ADF |
| 03 | delay jam by registration sensor | RF-ADF |
| 05 | stationary jam by registration sensor | ADF |
| 06 | double feeding by registration sensor | RF-ADF |
| 08 | document leading edge not detected by registration sensor at time of pick-up | RF |
| 09 | registration sensor does not turn on | ADF |
| 11 | delay jam 1 by reversal sensor | RF |
| 12 | stationary jam by reversal sensor | RF |
| 13 | delay jam 2 by reversal sensor | RF |
| 20 | initial stationary jam by reversal sensor | RF |
| 21 | reversal pick-up delay jam by registration sensor | RF |
| 23 | reversal pick-up stationary jam by registration sensor | RF |
| 41 | delay jam by delivery sensor | RF-ADF |
| 42 | stationary jam by delivery sensor | RF-ADF |
| 81 | open | RF-ADF |
| 82 | pick-up tray or upper cover open | RF-ADF |
| 83 | delivery document not detected by document sensor | RF-ADF |
| 84 | document detected by sensor at time of pick-up | RF-ADF |
| 85 | jam unique to test mode | ADF |
| 88 | document detected when first document is picked up | RF-ADF |
| 89 | recycle lever malfunctions while document is recirculated (2nd or later) | RF |
| 8A | feeding fault when documents of mixed sizes exist | ADF |
| 8B | last document trailing edge sensor remains on | ADF |

**Table 3-711**


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• **Details of DF Error Codes (EE)**

| Display No. | Description |
|---|---|
| 01 | E401 On signal |
| 02 | E402 ON signal |
| 03 | E403 ON signal |
| 04 | E404 ON signal |
| 11 | E411 ON signal |

**Table 3-712 DF ERR**

• **Details of DF Warnings (FF)**

| Display No. | Description |
|---|---|
| 01 | idle rotation of the recycle lever |
| 02 | document not detected by document edge sensor |
| 03 | separation fails at time of document pick-up |
| 04 | skew movement at time of document pick-up |
| 05 | document rides over the paper stop plate at time of document pick-up |
| 11 | number of documents different after jam removal |
| 12 | number of documents excessive |
| 13 | document pulled out |

The above signals are sent to the copier when the DF identifies incorrect placement of documents.

**Table 3-713 DF Alarms**

• **Details of Sorter Jam Codes (GG)**

| Display No. | Description |
|---|---|
| 03 | paper sensor delay jam |
| 04 | paper sensor stationary jam |
| 05 | paper sensor timing jam |
| 06 | stapler staple jam |
| 07 | paper detected by sensor at power-on |
| 08 | joint switch or cover switch turns off during copying operation |

**Table 3-714**

• **Details of Sorter Error Codes (HH)**

| Display No. | Description |
|---|---|
| 10 | E510 ON signal |
| 30 | E530 On signal |
| 31 | E531 ON signal |
| 40 | E540 ON signal |
| 41 | E541 ON signal |

**Table 3-715 Sorter ERR**

• **Details of Sorter Warnings (II)**

| Display No. | Description |
|---|---|
| 01 | paper feeding unit power-off |
| 02 | stack excess |

**Tale 3-716 Sorter Tray Alarm**

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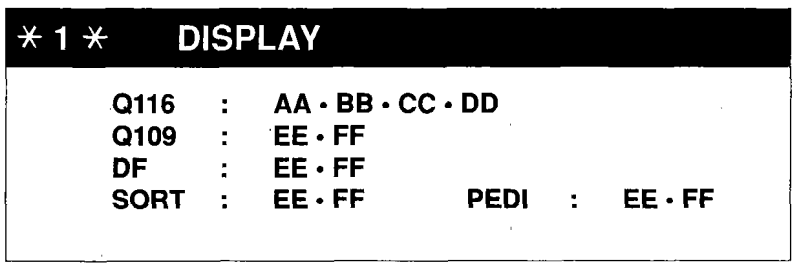
- **Details of Sorter Warnings (JJ)**

| Display No. | Description |
|---|---|
| 01 | staple down |
| 02 | staple jam |
| 05 | stapling capacity excess |
| 06 | stapling capacity full |
| 07 | mixed paper sizes (horizontal) |
| 08 | staple unit absent |
| 09 | stapled paper in bin |
| 0A | no staple |

**Table 3-717 Sorter Stapling Alarms**

- **Screen No. 5**




**Screen 3-6**

| Item | Description |
|---|---|
| Q116 | indicates the version of the ROM on the DC controller PCB. |
| Q109 | indicates the version of Q109 on the DC controller PCB. |
| PEDI | indicates the version of the ROM on the cassette feeding unit controller PCB. |
| DF | indicates the version of the ROM on the RF or ADF controller PCB. |
| SORT | indicates the version of the ROM on the sorter controller PCB. |

**Table 3-718**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- **Guide to Version Notation (Q116)**

Q116: AA • BB • CC • DD
- DD — for development and control
- CC — version No.
- BB — language (Table 3-719)
- AA — ROM type (Table 3-720)

- **Guide to Version Notation (Q109, DF, SORT, PEDI)**

Q109: / DF / SORT / PEDI — EE • FF
- FF — for development and control
- EE — version No.

- **Types of Languages**

| No. | Language | No. | Language |
|---|---|---|---|
| 10 | Japanese | 70 | Finnish |
| 20 | English | 80 | Italian |
| 30 | French | 90 | Norwegian |
| 40 | German | A0 | Portuguese |
| 50 | Danish | B0 | Spanish |
| 60 | Dutch | C0 | Swedish |

**Table 3-719**

- **Type of ROMs**

| No. | Type |
|---|---|
| 10 | Master ROM (fixed) |

**Table 3-720**

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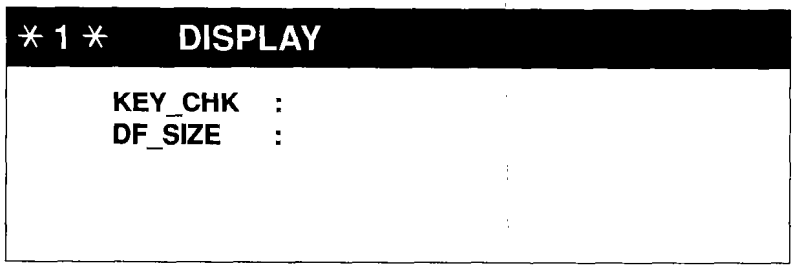
• Screen No. 6




Screen 3-7

| Item | Description | Remarks |
|---|---|---|
| KEY_CHK | checks the keys on the control panel. | Table 3-722 |
| DF_SIZE | indicates the document size identified by the RF or ADF. | Table 3-723 |

Table 3-721

| Display code | Key name | Display code | Key name |
|---|---|---|---|
| 000 | SORTER key | 023 | keypad 8 |
| 001 | COPY DENSITY key (lighter) | 024 | keypad 9 |
| 002 | AE key | 025 | CLEAR key |
| 003 | COPY DENSITY key (darker) | 026 | keypad 0 |
| 004 | REDUCE key | 027 | ID key |
| 005 | DIRECT key | 028 | PRE-HEAT key |
| 006 | ENLARGE key | 029 | ZOOM key |
| 007 | PAPER SELECT key | 030 | AUTO RATIO key |
| 009 | ⍓ key | 031 | TWO-SIDED key |
| 010 | ⍌ key | 032 | PAGE SEPARATION key |
| 012 | OK key | 033 | OVERLAY key |
| 013 | STOP key | 034 | REDUCE LAYOUT key |
| 014 | START key | 035 | BIND key |
| 015 | INTERRUPT key | 036 | FRAME ERASE key |
| 016 | keypad 1 | 037 | COVER key |
| 017 | keypad 2 | 038 | MODE MEORY key |
| 018 | keypad 3 | 039 | ⍟ key |
| 019 | keypad 4 | 045 | DOCUMNENT MIXED SIZE key |
| 020 | keypad 5 | 046 | ENLARGE LAYOUT key |
| 021 | keypad 6 | 047 | OHP INTERLEAF key |
| 022 | keypad 7 | | |

The table does not list the RESET key, as a press on the key changes the screen.

Table 3-722 (key codes)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① Size Identification (AB, feeding direction only, non-default size absent)

| Display code | Document size (mm) | | Slice level (mm) | |
|---|---|---|---|---|
| | | | ADF-B1 | RF-C1 |
| 17 | A5 | 145 × 210 | 165 | 175 |
| 1 | B5 | 182 × 257 | 196 | 203 |
| 3 | A4 | 210 × 297 | 234 | 250 |
| 4 | B5R | 257 × 182 | 277 | 290 |
| 6 | A4R | 297 × 210 | 314 | 323 |
| 2 | FOOLSCAP | 330 × 216 | 347 | 359 |
| 5 | B4 | 364 × 257 | 377 | 384 |
| 23 | COMPUTER | 381 × 279 | 400 | 415 |
| 7 | A3 | 420 × 297 | | |

Table 3-723a

② Size Identification (INCH, feeding direction only, non-default size absent)

| Display code | Document size (mm) | | Slice level (mm) | |
|---|---|---|---|---|
| | | | ADF-B1 | RF-C1 |
| 9 | STMT | 140 × 216 | 172 | 163 |
| 11 | LTR | 216 × 279 | 235 | 260 |
| 14 | LTRR | 279 × 216 | 305 | 310 |
| 2 | FOOLSCAP | 330 × 216 | 347 | 351 |
| 13 | LGL | 356 × 216 | 369 | 376 |
| 23 | COMPUTER | 381 × 279 | 407 | 427 |
| 15 | 11 × 17 | 432 × 279 | | |

Table 3-723b

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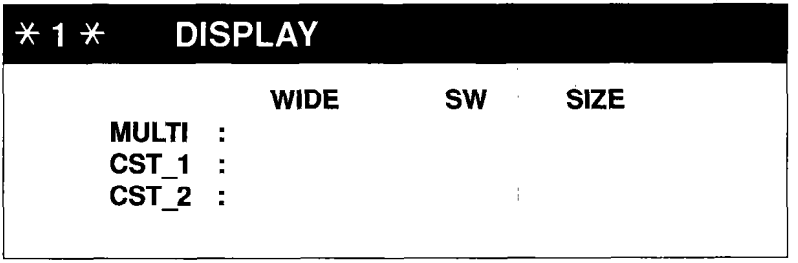
• Screen No. 7




Screen 3-8

| Item | Description | Remarks |
|---|---|---|
| MULTI<br>CST_1<br>CST_2 | indicates the paper size sensor output and the size of the copy paper in each of the cassettes and the multifeeder.<br><br>MULTI: multifeeder<br>CST-1: cassette 1<br>CST-2: cassette 2<br>WIDE: output of paper width sensor (analog)<br>SW: output of paper length sensor ('1', '0')<br>SIZE: paper width (mm) | |

Table 3-725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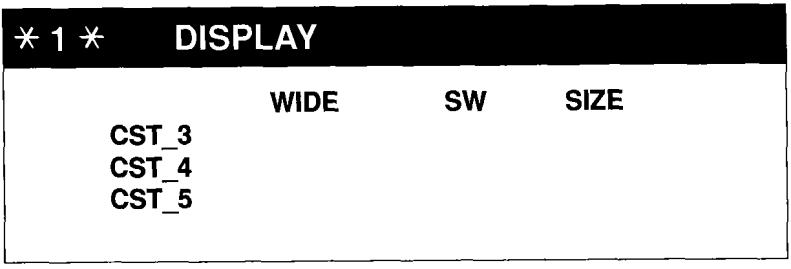
• Screen No. 8




Screen 3-9

| Item | Description | Remarks |
|---|---|---|
| CST_3<br>CST_4<br>CST_5 | indicates the paper size sensor output and the size of the copy paper in each of the cassettes.<br><br>CST-3: cassette 3<br>CST-4: cassette 4<br>CST-5: cassette 5<br>WIDE: output of paper width sensor (analog)<br>SW: output of paper length sensor ('1', '0')<br>SIZE: paper width (mm) | |

Table 3-727

**Note:**
In the case of a duplexing/two-cassette feeding unit, CST-4 represents the upper cassette in the cassette feeding unit and CST-5, the bottom cassette.

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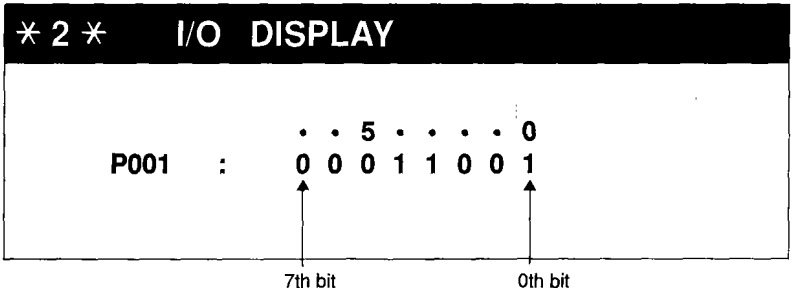
## E. I/O Display Mode ( ✳ 2 ✳ )

- Select the screen using the ▽ or △ key.
- You can check the 8-bit inputs/outputs of each port.

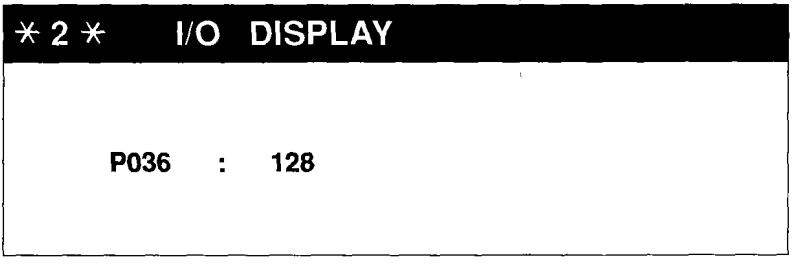
Each address is assigned the following tasks:

P001 thru P018: port s of master CPU (Q102; PA0 thru PC5)
P019 thru P024: indicates the state of the control panel key switches arranged in a matrix
P025 thru P029: indicates the state of control panel LEDs
P030 thru P042: ports of slave CPUY (Q109; P0 thru P7, AD0 thru AD7)
P043 thru P055: DF-related
P056 thru P068: sorter-related
P069 thru P088: cassette feeding unit-related

- **I/O Display (example)**




**Screen 3-10**




**Screen 3-11**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| Address | bit | Description | Signal | Jack No. | Remarks |
|---|---|---|---|---|---|
| P001 (input) | 0 | right door open/closed sensor (PS19) signal | RDC | J107-A11 | 1: door open |
| | 1 | multifeeder paper sensor (PS8) signal | $\overline{\text{MFPD}}$ | J104-A6 | 0: paper present |
| | 2 | cassette 1 paper sensor (PS2) signal | C1PD | J107-A8 | 1: paper present |
| | 3 | cassette 2 paper sensor (PS5) signal | C2PD | J108-B2 | 1: paper present |
| | 4 | cassette 1 lifter sensor (PS4) signal | $\overline{\text{C1LTP}}$ | J107-A5 | 0: cassette 1 lifter up |
| | 5 | cassette 2 lifter sensor (PS3) signal | $\overline{\text{C2LTP}}$ | J108-B5 | 0: cassette 2 lifter up |
| | 6 | — | — | — | — |
| | 7 | control card detected | $\overline{\text{CCDT}}$ | J109-B3 | 0: control card present |
| P002 (output) | 0 | cassette 1 pick-up release solenoid (SL1) drive signal | $\overline{\text{SL1D}}$ | J107-B6 | 1: SL1 ON |
| | 1 | cassette 2 pick-up release solenoid (SL2) drive signal | $\overline{\text{SL2D}}$ | J108-B8 | 1: SL2 ON |
| | 2 | cassette 1 pick-up clutch (CL2) drive signal | $\overline{\text{CL2D}}$ | J107-B4 | 1: CL2 ON |
| | 3 | cassette 2 pick-up clutch (CL3) drive signal | $\overline{\text{CL3D}}$ | J108-A2 | 1: CL3 ON |
| | 4 | vertical path 1 clutch (CL4) drive signal | $\overline{\text{CL4D}}$ | J107-B2 | 1: CL4 ON |
| | 5 | vertical path 2 clutch (CL5) drive signal | $\overline{\text{CL5D}}$ | J108-A4 | 1: CL5 ON |
| | 6 | multifeeder pick-up solenoid (SL6) drive signal | $\overline{\text{SL6D}}$ | J104-A8 | 1: SL6 ON |
| | 7 | multifeeder pick-up clutch (CL6) dive signal | $\overline{\text{CL6D}}$ | J104-A10 | 1: CL1 ON |
| P003 (output) | 0 | registration roller clutch (CL1) drive signal | $\overline{\text{CL1D}}$ | J105-A1 | 1: CL1 ON |
| | 1 | registration roller clutch (CL1) application voltage switch | — | J105-A2 | 1: 24V<br>0: 12V |
| | 2 | cassette 1 lifter motor (M4) drive signal | M4D | J112-B6 | 1: M4 ON |
| | 3 | cassette 2 lifter motor (M5) drive signal | M5D | J113-B13 | 1: M5 ON |
| | 4 | fixing main heater (H1) drive signal | MHRD | J112-B2 | 1: H1 ON |
| | 5 | fixing sub heater (H2) drive signal | SHRD | J112-B3 | 1: H2 ON |
| | 6 | cleaning belt solenoid (SL3) drive signal | $\overline{\text{SL3D}}$ | J113-B11 | 1: SL3 ON |
| | 7 | hopper motor (M3) drive signal | M3D | J112-B8 | 1: M3 ON |

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| Address | bit | Description | Signal | Jack No. | Remarks |
|---|---|---|---|---|---|
| P004 (input) | 0 | vertical path roller 1 paper sensor (PS6) signal | PDP1 | J107-A2 | 1: paper present |
| | 1 | vertical path roller 2 paper sensor (PS7) signal | PDP2 | J108-A6 | 1: paper present |
| | 2 | pre-registration paper sensor (PS9) signal | PDP3 | J113-A9 | 1: paper present |
| | 3 | separation sensor (PS10) signal | $\overline{\text{PDP4}}$ | J111-A11 | 0: paper present |
| | 4 | delivery sensor (PS11) signal | $\overline{\text{PDP5}}$ | J113-B4 | 0: paper present |
| | 5 | delivery sensor (PS11) signal | $\overline{\text{PDP5}}$ | J113-B4 | 0: paper present |
| | 6 | duplexing unit inlet paper sensor (PS14) signal | $\overline{\text{PDP6}}$ | J110-B12 | 0: paper present |
| | 7 | high-voltage CPUACK | — | J114-A9 | 0: ACK |
| P005 (output) | 0 | transmission signal (data line) from DC controller PCB to composite power supply | HVDATA0 | J114-A1 | — |
| | 1 | | HVDATA1 | J114-A2 | — |
| | 2 | | HVDATA2 | J114-A3 | — |
| | 3 | | HVDATA3 | J114-A4 | — |
| | 4 | | HVDATA4 | J114-A5 | — |
| | 5 | | HVDATA5 | J114-A6 | — |
| | 6 | | HVDATA6 | J114-A7 | — |
| | 7 | | HVDATA7 | J114-A8 | — |
| P006 (output) | 0 | transmission signal from master CPU to slave CPU | DPREQ | — | — |
| | 1 | — | — | — | — |
| | 2 | high-voltage CPUREQ | HVREQ | J114-A10 | — |
| | 3 | transmission signal (command line) from DC controller PCb to composite power supply PCB | HVCMD0 | J114-B1 | — |
| | 4 | | HVCMD1 | J114-B2 | — |
| | 5 | | HVCMD2 | J114-B3 | — |
| | 6 | — | — | — | |
| | 7 | back-light (cathode ray tube) drive signal | BKLD | J112-A6 | 1: ON |


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| Address | bit | Description | Signal | Jack No. | Remarks |
|---|---|---|---|---|---|
| P007 (input) | 0 | copyboard cover open/closed sensor (PS18) signal | CBCC | J105-A7 | 1: cover closed |
| | 1 | waste toner full sensor (PS15) signal | TN_OUT | J105-A10 | 0: alternates between 1 and 0 when full |
| | 2 | transmission signal (error command) from composite power supply PCB to DC controller PCB | ECMD2 | J114-B4 | 1: door open |
| | 3 | | ECMD1 | J114-B5 | 0: paper present |
| | 4 | | ECMD0 | J114-B6 | 1: paper present |
| | 5 | — | — | — | — |
| | 6 | — | — | — | — |
| | 7 | DPACK | DPACK | — | — |
| P008 (output) | 0 | scanner cooling fan (FM) drive signal | $\overline{\text{FMID}}$ | J105-A4 | 0: FM1 ON |
| | 1 | main motor (M1) drive signal | MID | J113-A12 | 1: M1 ON |
| | 2 | pre-exposure lamp (LA2) drive signal | $\overline{\text{PEXP}}$ | J110-B8 | 1: LA2 ON |
| | 3 | exhaust fan (FM2) drive signal | $\overline{\text{FM2D}}$ | J111-A1 | 1: FM2 ON |
| | 4 | feeding fan (FM3) drive signal | $\overline{\text{FM3D}}$ | J111-A7 | 1: FM3 ON |
| | 5 | transmission signal from scanner motor to slave CPU | SCMD | — | 1: M2 ON |
| | 6 | — | — | — | — |
| | 7 | delivery flapper solenoid (SL5) drive signal | $\overline{\text{SL5D}}$ | J113-B1 | 1: SL5 ON |
| P009 (input/ output) | 0 | scanner home position sensor (PS1) signal | SCHP | J110-A14 | 1: at HP |
| | 1 | scanning lamp (LA1) drive detection signal | LAMPD | J114-B9 | 1: LA ON |
| | 2 | auto power-off open circuit detection | PWOFFD | J112-A1 | 1: open<br>0: OK |
| | 3 | main motor PLL lock detection | LOCK | J113-A13 | 0: lock |
| | 4 | main motor SSR drive detection signal | MSSRD | J112-B1 | H: drive<br>L: OK |
| | 5 | sub heater SSR drive detection signal | SSSRD | J112-B4 | H: drive<br>L: OK |
| | 6 | main counter open circuit detection | CNT1BD | J112-A12 | H: open<br>L: ON |
| | 7 | option counter open circuit | CNT2BD | J113-B10 | H: open<br>L: ON |

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| Address | bit | Description | Signal | Jack No. | Remarks |
|---|---|---|---|---|---|
| P010 (input) | 0 | document size sensor 1 (PS20) signal | SZ1 | J105-B2 | L: document present |
| | 1 | document size sensor 2 (PS21) signal | SZ2 | J105-B5 | L: document present |
| | 2 | document size sensor 3 (PS22) signal | SZ3 | J105-B8 | L: document present |
| | 3 | document size sensor 4 (PS23) signal | SZ4 | J105-B11 | L: document present |
| | 4 | — | — | — | — |
| | 5 | — | — | — | — |
| | 6 | — | — | — | — |
| | 7 | developing assembly toner sensor (TS1) signal | $\overline{\text{TEP}}$ | J111-A4 | 0: toner absent |
| P011 (output) | 0 | blank shutter solenoid (SL4) drive signal | SL4D | J110-B10 | 1: SL4 ON |
| | 1 | document size sensor ON/OFF | DSIZEON | J105-B3 | 1: ON |
| | 2 | — | — | — | — |
| | 3 | — | — | — | — |
| | 4 | counter drive signal | $\overline{\text{CNT1D}}$ | J11-A12 | 1: count up |
| | 5 | option counter drive signal | $\overline{\text{CNT2D}}$ | J113-B10 | 1: count up |
| | 6 | control card | $\overline{\text{CCD}}$ | J109-A13 | 0: control card absent |
| | 7 | auto power-off drive signal | $\overline{\text{PWOFF}}$ | J112-A1 | 1: |
| P012 (input/ output) | 0 | primary charging roller cleaning solenoid (SL7) drive signal | $\overline{\text{SL7D}}$ | J105-B13 | 1: SL7 ON |
| | 1 | transfer roller lock/release solenoid (SL8) drive signal | $\overline{\text{SL8D}}$ | J111-A9 | 1: SL8 ON |
| | 2 | — | — | — | — |
| | 3 | — | — | — | — |
| | 4 | cassette feeding unit control signal 0 | PDCNT0 | J113-A1 | — |
| | 5 | cassette feeding unit control signal 1 | PDCNT1 | J113-A2 | — |
| | 6 | cassette feeding unit control signal 2 | PDCNT2 | J113-A3 | — |
| | 7 | watch dog (PCB signal) | WTDG | — | : |


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| Address | bit | Description | Signal | Jack No. | Remarks |
|---|---|---|---|---|---|
| P013 (input) | 0 | — | — | — | — |
| | 1 | cassette 1 paper length sensor (SEU1) signal | C1SZ1 | J104-B2 | 0: PS102 ON |
| | 2 | | C1SZ2 | J104-B1 | 0: PS101 ON |
| | 3 | — | — | — | — |
| | 4 | cassette 2 paper length sensor (SEU2) signal | C2SZ1 | J104-B6 | 0: PS104 ON |
| | 5 | | C2SZ2 | J104-B5 | 0: PS103 ON |
| | 6 | service switch (SSW) signal | SERVICE | J112-A11 | 0: service switch ON |
| | 7 | — | — | — | — |
| P014 | 0 | oscillation signal 0 | DIGIT0 | J109-A2 | — |
| | 1 | oscillation signal 1 | DIGIT1 | J109-B14 | — |
| | 2 | oscillation signal 2 | DIGIT2 | J109-A3 | — |
| | 3 | oscillation signal 3 | DIGIT3 | J109-B13 | — |
| | 4 | oscillation signal 4 | DIGIT4 | J109-A4 | — |
| | 5 | oscillation signal 5 | DIGIT5 | J109-B12 | — |
| | 6 | — | — | — | — |
| | 7 | — | — | — | — |
| P015 (input/ output) | 0 | drive signal 0 | LDATA0 | J109-A9 | control panel LED drive signal |
| | 1 | drive signal 1 | LDATA1 | J109-B7 | |
| | 2 | drive signal 2 | LDATA2 | J109-A10 | |
| | 3 | drive signal 3 | LDATA3 | J109-B6 | |
| | 4 | drive signal 4 | LDATA4 | J109-A11 | |
| | 5 | drive signal 5 | LDATA5 | J109-B5 | |
| | 6 | drive signal 6 | LDATA6 | J109-A12 | |
| | 7 | drive signal 7 | LDATA7 | J109-B4 | |
| P016 (input) | 0 | key read signal 0 | RETURN0 | J109-A5 | reads key inputs of control panel keys |
| | 1 | key read signal 1 | RETURN1 | J109-B11 | |
| | 2 | key read signal 2 | RETURN2 | J109-A6 | |
| | 3 | key read signal 3 | RETURN3 | J109-B10 | |

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| Address | bit | Description | Signal | Jack No. | Remarks |
|---|---|---|---|---|---|
| P016 (input) | 4 | key read signal 4 | RETURN4 | J109-A7 | reads key inputs of control panel keys |
| | 5 | key read signal 5 | RETURN5 | J109-B9 | |
| | 6 | key read signal 6 | RETURN6 | J109-A8 | |
| | 7 | key read signal 7 | RETURN7 | J109-B8 | |
| P017 | 0 | — | — | — | — |
| | 1 | — | — | — | — |
| | 2 | — | — | — | — |
| | 3 | — | — | — | — |
| | 4 | — | — | — | — |
| | 5 | — | — | — | — |
| | 6 | — | — | — | — |
| | 7 | — | — | — | — |
| P018 | 0 | — | — | — | — |
| | 1 | — | — | — | — |
| | 2 | — | — | — | — |
| | 3 | — | — | — | — |
| | 4 | — | — | — | — |
| | 5 | — | — | — | — |
| | 6 | — | — | — | — |
| | 7 | — | — | — | — |
| P019 (input) | 0 | SORTER key | — | — | 1: ON |
| | 1 | COPY DENSITY key (lighter) | — | — | 1: ON |
| | 2 | AE key | — | — | 1: ON |
| | 3 | COPY DENSITY key (darker) | — | — | 1: ON |
| | 4 | REDUCE key | — | — | 1: ON |
| | 5 | DIRECT key | — | — | 1: ON |
| | 6 | ENALRGE key | — | — | 1: ON |
| | 7 | PAPER SELET key | — | — | 1: ON |


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| Address | bit | Description | Signal | Jack No. | Remarks |
|---|---|---|---|---|---|
| P020 (input) | 0 | RESET key | — | — | 1: ON |
| | 1 | ⊠ key | — | — | 1: ON |
| | 2 | ⊡ key | — | — | 1: ON |
| | 3 | — | — | — | — |
| | 4 | OK key | — | — | 1: ON |
| | 5 | STOP key | — | — | 1: ON |
| | 6 | START key | — | — | 1: ON |
| | 7 | INTERRUPT key | — | — | 1: ON |
| P021 (input) | 0 | numeric keypad 1 | — | — | 1: ON |
| | 1 | numeric keypad 2 | — | — | 1: ON |
| | 2 | numeric keypad 3 | — | — | 1: ON |
| | 3 | numeric keypad 4 | — | — | 1: ON |
| | 4 | numeric keypad 5 | — | — | 1: ON |
| | 5 | numeric keypad 6 | — | — | 1: ON |
| | 6 | numeric keypad 7 | — | — | 1: ON |
| | 7 | numeric keypad 8 | — | — | 1: ON |
| P022 (input) | 0 | numeric keypad 9 | — | — | 1: ON |
| | 1 | CLEAR key | — | — | 1: ON |
| | 2 | numeric keypad 0 | — | — | 1: ON |
| | 3 | ID key | — | — | 1: ON |
| | 4 | PRE-HEAT key | — | — | 1: ON |
| | 5 | ZOOM key | — | — | 1: ON |
| | 6 | AUTO RATIO key | — | — | 1: ON |
| | 7 | TWO-SIDED key | — | — | 1: ON |
| P023 (input) | 0 | PAGE SEPARATE key | — | — | 1: ON |
| | 1 | OVERLAY key | — | — | 1: ON |
| | 2 | REDUCE LAYOUT key | — | — | 1: ON |
| | 3 | BIND key | — | — | 1: ON |

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| Address | bit | Description | Signal | Jack No. | Remarks |
|---|---|---|---|---|---|
| P023 (input) | 4 | FRAME ERASE key | — | — | 1: ON |
| | 5 | COVER key | — | — | 1: ON |
| | 6 | MODE MEMORY key | — | — | 1: ON |
| | 7 | USER MEMORY (asterisk) key | — | — | 1: ON |
| P024 (input) | 0 | — | — | — | — |
| | 1 | — | — | — | — |
| | 2 | — | — | — | — |
| | 3 | — | — | — | — |
| | 4 | — | — | — | — |
| | 5 | DOCUMENT MIXED SIZE key | — | — | 0: LED ON |
| | 6 | ENLARGE LAYOUT key | — | — | 0: LED ON |
| | 7 | OHP INTERLEAF key | — | — | 0: LED ON |
| P025 (input) | 0 | SORT LED | — | — | 0: LED ON |
| | 1 | F1 LED | — | — | 0: LED ON |
| | 2 | F2 LED | — | — | 0: LED ON |
| | 3 | F3 LED | — | — | 0: LED ON |
| | 4 | F4 LED | — | — | 0: LED ON |
| | 5 | F5 LED | — | — | 0: LED ON |
| | 6 | F6 LED | — | — | 0: LED ON |
| | 7 | START key LED (red 1) | — | — | 0: LED ON |
| P026 (input) | 0 | F7 LED | — | — | 0: LED ON |
| | 1 | F8 LED | — | — | 0: LED ON |
| | 2 | F9 LED | — | — | 0: LED ON |
| | 3 | AE LED | — | — | 0: LED ON |
| | 4 | START key LED (green 1) | — | — | 0: LED ON |
| | 5 | START key LED (green 2) | — | — | 0: LED ON |
| | 6 | INTERRUPT key | — | — | 0: LED ON |
| | 7 | START key LED (red 2) | — | — | 0: LED ON |


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| Address | bit | Description | Signal | Jack No. | Remarks |
|---|---|---|---|---|---|
| P027 (input) | 0 | — | — | — | — |
| | 1 | ZOOM key LED | — | — | 0: LED ON |
| | 2 | AUTO RATIO key LED | — | — | 0: LED ON |
| | 3 | TWO-SIDED key LED | — | — | 0: LED ON |
| | 4 | PAGE SEPARATE key LED | — | — | 0: LED ON |
| | 5 | OVERLAY key LED | — | — | 0: LED ON |
| | 6 | REDUCE LAYOUT key LED | — | — | 0: LED ON |
| | 7 | PRE-HEAT key LED | — | — | 0: LED ON |
| P028 (input) | 0 | BIND key LED | — | — | 0: LED ON |
| | 1 | FRAME ERASE key LED | — | — | 0: LED ON |
| | 2 | COVER key LED | — | — | 0: LED ON |
| | 3 | MEMORY key LED | — | — | 0: LED ON |
| | 4 | USER MODE key LED | — | — | 0: LED ON |
| | 5 | ENLARGE LAYOUT key LED | — | — | 0: LED ON |
| | 6 | OHP INTERLEAF key LED | — | — | 0: LED ON |
| | 7 | — | — | — | — |
| P029 | 0 | DOCUMENT SIZE MIXED LED | — | — | 0: LED ON |
| | 1 | — | — | — | — |
| | 2 | — | — | — | — |
| | 3 | — | — | — | — |
| | 4 | — | — | — | — |
| | 5 | — | — | — | — |
| | 6 | — | — | — | — |
| | 7 | — | — | — | — |
| P030 (input) | 0 | lens x motor (M6) drive signal | LEXA | J116-B1 | alternates between 1 and 0 during rotation |
| | 1 | | LEXB | J116-B2 | |
| | 2 | lens y motor (M7) drive signal | LEYA | J116-B11 | |
| | 3 | | LEYB | J116-B10 | |

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| Address | bit | Description | Signal | Jack No. | Remarks |
|---|---|---|---|---|---|
| P030 (input) | 4 | blank shutter (front) motor (M8) dive signal | BLFA | J110-B1 | alternates between 1 and 0 during rotation |
| | 5 | | BLFB | J110-B4 | |
| | 6 | blank shutter (rear) motor (M9) dive signal | BLBA | J110-A1 | |
| | 7 | | BLBB | J110-A4 | |
| P031 (output) | 0 | scanner motor (M2) drive signal | SCT1 | J116-A12 | alternates between 1 and 0 during rotation |
| | 1 | | SCT2 | J116-A11 | |
| | 2 | | SCT3 | J116-A10 | |
| | 3 | | SCT4 | J116-A9 | |
| | 4 | | SCT5 | J116-A8 | |
| | 5 | | SCT6 | J116-A7 | |
| | 6 | scanner motor (M2) excitation signal | SCMHLD | — | always 0 while power is on |
| (input) | 7 | scanner home position sensor (PS1) signal | SCHP | J110-A14 | 1: at HP |
| P032 (input) | 0 | — | — | — | — |
| | 1 | — | — | — | — |
| | 2 | scanner motor start (signal from master; PCB signal) | SCMD | — | — |
| | 3 | lens home position sensor (PS16) signal | LXHP | J116-A1 | 1: at HP |
| | 4 | lens Y home position sensor (PS17) signal | LYHP | J116-B8 | 1: at HP |
| | 5 | blank shutter (front) home position sensor (PS12) signal | BLFHP | J110-A8 | 1: at HP |
| | 6 | blank shutter (rear) home position sensor (PS13) signal | BLBHP | J110-A11 | 1: at HP |
| | 7 | DPRAMREQ (from master) | DPREQ | — | — |
| P033 (output) | 0 | image exposure signal | — | — | — |
| | 1 | lens Y motor (M7) hold signal | LEYHLD | J116-B9 | 1: 24V<br>0: 5V |
| | 2 | blank shutter motor (M8, M9) hold signal | BLHLD | — | 1: hold |
| | 3 | blank shutter solenoid (SL4) | SL4D | J110-B10 | 1: SL4 ON |
| | 4 | scanner motor current down signal | SCMHLD | J116-A2 | |


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| Address | bit | Description | Signal | Jack No. | Remarks |
|---|---|---|---|---|---|
| P033 (output) | 5 | scanner motor latch pulse (PCB signal) | OMLATCH | — | — |
| | 6 | DPRAMACK (to master CPU; PCB signal) | DPACK | — | — |
| | 7 | master counter clock (to master CPU; PCB signal) | CLOCK | — | — |
| P034 (output) | 0 | scanner motor (M2) drive signal | SCT7 | J116-A6 | alternates between 0 and 1 during rotation |
| | 1 | | SCT8 | J116-A5 | |
| | 2 | | SCT9 | J116-A4 | |
| | 3 | | SCT10 | J116-A3 | |
| | 4 | RD (to dual port RAM) | $\overline{SRD}$ | — | — |
| | 5 | WR (to dual port RAM) | $\overline{SWR}$ | — | — |
| | 6 | WAIT | — | — | — |
| | 7 | lens X motor (M6) hold signal | LEXHLD | J116-B3 | analog value |
| P035 | — | fixing thermistor (TH1) signal | TH1 | J112-A3 | analog value |
| P036 | — | APVC current value | — | J901-8 | analog value |
| P037 | — | AE sensor signal | AE | J116-B6 | analog value |
| P038 | — | lamp regulator voltage signal (composite power supply PCB) | LAMPS | J114-B9 | analog value |
| P039 | — | cassette 1 paper width detection VR (SVR1) signal | C1PW | J104-B11 | analog value |
| P040 | — | cassette 2 paper width detection VR (SVR2) signal | C2PW | J104-B14 | analog value |
| P041 | — | multifeeder paper width detection VR (SVR3) signal | MFPW | J104-A13 | analog value |
| P042 | — | ambient sensor signal | LASIG | — | analog value |

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• ADF-B1

| Address | bit | Description | Signal | Jack No. | Remarks |
|---|---|---|---|---|---|
| P043 | 0 | cover open/closed sensor (MS2) signal | $\overline{\text{UPCC}}$ | J3-2 | 0: open |
| | 1 | ADF open/closed sensor (MS1) signal | $\overline{\text{DFC}}$ | J2-3 | 0: open |
| | 2 | LED 1 drive signal (PCB signal) | — | — | 0: ON |
| | 3 | LED 2 drive signal (PCB signal) | — | — | 0: ON |
| | 4 | pick-up roller sensor (S3) signal | $\overline{\text{PUSP}}$ | J8-7A | 1: detected |
| | 5 | pick-up sensor (S5) signal | PDP1 | J9-1 | 1: detected |
| | 6 | delivery sensor (S1) signal | PDP2 | J10-2 | 1: detected |
| | 7 | LED3 drive signal (PCB signal) | — | — | 0: ON |
| P044 | 0 | document set LED drive signal | $\overline{\text{PSD}}$ | J8-4B | 1: ON |
| | 1 | pick-up motor (M2) drive signal | PUMD | J7-1 | 1: ON |
| | 2 | delivery motor (M3) drive signal | DMD | J6-1 | 1: ON |
| | 3 | belt motor clock pulse | — | — | 1: ON |
| | 4 | belt feed motor (M1) drive signal | BMD | J5-1 | 1: ON |
| | 5 | brake (BK) drive signal | BKD | J4-1 | 1: ON |
| | 6 | paper holding plate solenoid (SL1) drive signal | $\overline{\text{WGTSLD}}$ | J9-7 | 1: ON |
| | 7 | stop plate solenoid (SL2) drive signal | STPSLD | J12-1 | 1: ON |
| P045 | 0 | communication signal | — | — | — |
| | 1 | communication signal | — | — | — |
| | 2 | communication signal | — | — | — |
| | 3 | delivery motor clock pulse signal | — | — | — |
| | 4 | PCB signal | — | — | — |
| | 5 | PCB signal | — | — | — |
| | 6 | communication signal | — | — | — |
| | 7 | communication signal | — | — | — |
| P046 | 0 | | — | — | — |
| | 1 | | — | — | — |
| | 2 | | — | — | — |


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• ADF-B1

| Address | bit | Description | Signal | Jack No. | Remarks |
|---|---|---|---|---|---|
| P046 | 3 | — | — | — | — |
| | 4 | — | — | — | — |
| | 5 | — | — | — | — |
| | 6 | — | — | — | — |
| | 7 | — | — | — | — |
| P047 | 0 | — | — | — | — |
| | 1 | — | — | — | — |
| | 2 | — | — | — | — |
| | 3 | — | — | — | — |
| | 4 | — | — | — | — |
| | 5 | — | — | — | — |
| | 6 | — | — | — | — |
| | 7 | — | — | — | — |
| P048 | — | — | — | — | — |
| P049 | — | document stop position adjustment VR | — | — | in hexadecimal notation |
| P050 | — | DIP switches 3, 4 | — | — | |
| P051 | — | DIP switches 1, 2; push switch | — | — | |
| P052 | — | 2-to-1 paper gap adjustment VR | — | — | |
| P053 | — | serial communication detection | — | — | |
| P054 | — | last document trailing edge sensor (S8) signal | DEP | J8-3B | |
| P055 | — | document detection sensor (S6) signal | DEP | J11-2 | |

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• RF-C1

| Address | bit | Description | Signal | Jack No. | Remarks |
|---|---|---|---|---|---|
| P043 | 0 | recycle motor drive signal | $\overline{\text{RMD}}$ | J8-6 | 1: ON |
| | 1 | document set indicator LED drive signal | $\overline{\text{DSD}}$ | J8-4 | 1: ON |
| | 2 | clutch drive signal | $\overline{\text{CCD}}$ | J13-2 | 1: ON |
| | 3 | brake drive signal | $\overline{\text{BKD}}$ | J6-2 | 1: ON |
| | 4 | stop plate solenoid drive signal | $\overline{\text{STPSLD}}$ | J5-4 | 1: ON |
| | 5 | paper deflector solenoid drive signal | $\overline{\text{DFSLD}}$ | J4-2 | 1: ON |
| | 6 | PC signal | — | — | — |
| | 7 | — | — | — | — |
| P044 | 0 | — | — | — | — |
| | 1 | belt motor clock pulse | — | TP1-1 | — |
| | 2 | belt motor direction switch signal | — | — | — |
| | 3 | belt motor drive signal | — | — | — |
| | 4 | feeder motor drive signal | FMD | TP2-4 | — |
| | 5 | feeder motor short brake signal | — | — | — |
| | 6 | pick-up motor drive signal | PUMD | J12-1 | 1: ON |
| | 7 | paper holding plate solenoid drive signal | $\overline{\text{WSLD}}$ | J5-2 | 1: ON |
| P045 | 0 | communication signal | — | — | — |
| | 1 | communication signal | — | — | — |
| | 2 | PCB signal | — | — | — |
| | 3 | belt motor clock sensor signal | BMCLK | J9-23 | — |
| | 4 | PCB signal | — | — | — |
| | 5 | PCB signal | — | — | — |
| | 6 | PCB signal | — | — | — |
| | 7 | PCB signal | — | — | — |
| P046 | 0 | reversal sensor signal | PDP5 | J9-17 | 1: paper present |
| | 1 | pick-up roller sensor signal | PUSP | J9-8 | 1: pick-up roller HP |
| | 2 | pick-up sensor signal | PDP1 | J9-14 | 1: paper present |


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• RF-C1

| Address | bit | Description | Signal | Jack No. | Remarks |
|---|---|---|---|---|---|
| P046 | 3 | delivery sensor signal | PDP2 | J9-11 | 1: paper present |
| | 4 | recycle sensor signal | LDD | J8-2 | 0: recycle lever on document |
| | 5 | LED1 drive signal | — | — | — |
| | 6 | LED2 drive signal | — | — | — |
| | 7 | LED3 drive signal | — | — | — |
| P047 | 0 | DIP switch setting | — | — | — |
| | 1 | DIP switch setting | — | — | — |
| | 2 | DIP switch setting | — | — | — |
| | 3 | DIP switch setting | — | — | — |
| | 4 | DIP switch setting | — | — | — |
| | 5 | DIP switch setting | — | — | — |
| | 6 | DIP switch setting | — | — | — |
| | 7 | editor set signal | — | J10-3 | 0: editor set |
| P048 | — | — | — | — | hexadecimal notation |
| P049 | — | registration sensor signal | PDP3 | J9-25 | |
| P050 | — | — | — | — | |
| P051 | — | document sensor signal | DEP1 | J5-5 | |
| P052 | — | push switch | — | — | |
| P053 | — | RF switch signal | RFC | J2-6 | |
| P054 | — | upper cover sensor signal | $\overline{\text{UPCC1}}$ | J9-30 | |
| P055 | — | — | — | — | |

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• Stapler Sorter-C1

| Address | bit | Description | Signal | Jack No. | Remarks |
|---|---|---|---|---|---|
| P056 | 0 | — | — | — | — |
| | 1 | stapling HP sensor (P112) | SPL-HP | J11-3 | 1: stapling home position |
| | 2 | stapler unit swing sensor (MS9) signal | SWG SET | J8-5 | 1: at HP or stapling position |
| | 3 | stapler cover open/closed sensor (MS5) signal | SPLOPN | J10-3 | 1: stapler cover open |
| | 4 | guide bar HP sensor (P15) signal | SGBHP | J12-6 | 1: at HP |
| | 5 | reed cam HP sensor (P15) signal | LCHP | J14-5 | 1: at HP |
| | 6 | — | — | — | — |
| | 7 | — | — | — | — |
| P057 | 0 | guide bar swing motor (M3) phase A excitation signal | $\overline{MA}$ | J13-3.5 | alternates between 1 and 0 while motor is in operation |
| | 1 | guide bar swing motor (M3) phase B excitation signal | $\overline{MB}$ | J13-4.6 | |
| | 2 | guide bar swing motor (M3) drive signal | MON | J13-2 | 1: motor ON |
| | 3 | stapler motor (M4) normal rotation signal | $\overline{SPLMFW}$ | — | 0: normal rotation |
| | 4 | stapler motor (M4) reverse rotation signal | $\overline{SPLMFV}$ | — | 0: reverse rotation |
| | 5 | switch-back path solenoid (SL1) drive signal | $\overline{PSLD}$ | J7-8 | 0: SL2 ON |
| | 6 | paper path switch solenoid (SL2) drive signal | PSLD | J7-8 | 0: SL2 ON |
| | 7 | paper holding solenoid (SL30) drive signal | PHSLD | J5-2 | 0: SL3 ON |
| P058 | 0 | motor switch signal | — | — | — |
| | 1 | stapling ready indicator drive signal | SPLOK | J8-4 | 1: LED ON |
| | 2 | bin sensor LED drive signal | BPD | J12-2 | — |
| | 3 | motor clock signal | — | — | — |
| | 4 | stapler unit swing motor (M5) drive signal | $\overline{SWGMD}$ | J9-1 | 1: M5 ON |
| | 5 | feeder motor clock sensor (P16) signal | FMCLK | J5-4 | — |


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| Address | bit | Description | Signal | Jack No. | Remarks |
|---|---|---|---|---|---|
| P058 | 6 | — | — | — | — |
| | 7 | feeder motor (M1) brake signal | — | — | 1: M1 stop |
| P059 | 0 | stapling position sensor signal | — | — | 1: paper present reserved |
| | 1 | — | SPD | — | — |
| | 2 | manual staple key signal | — | J8-4 | 0: switch ON |
| | 3 | non-sort paper sensor signal | MNSPL | — | 0: paper present |
| | 4 | sort paper sensor signal | $\overline{\text{NSPEXT}}$ | J7-5 | 0: paper present |
| | 5 | bin unit HP sensor signal | $\overline{\text{SPEXT}}$ | J7-2 | 1: bin unit at HP |
| | 6 | joint sensor signal | BHP | J14-2 | 0: sorter release |
| | 7 | reset signal | $\overline{\text{SOP}}$ | J2-2 | — |
| P060 | 0 | stapler set sensor signal | — | — | 0: at stapling position |
| | 1 | — | SPL_SET | J10-6 | — |
| | 2 | — | — | — | — |
| | 3 | — | — | — | — |
| | 4 | — | — | — | — |
| | 5 | — | — | — | — |
| | 6 | — | — | — | — |
| | 7 | — | — | — | — |
| P061 | — | DIP switch 3, 4 | — | — | hexadecimal notation |
| P062 | — | DIP switch 1, 2 | — | — | |
| P063 | — | shift tet switch up/down | — | — | |
| P064 | — | jumper 1, 2 | — | — | |
| P065 | — | staple sensor | — | — | |
| P066 | — | — | — | — | |
| P067 | — | bin paper sensor | — | — | |
| P068 | — | 24V power supply board | — | — | |

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• Stapler Sorter-B2

| Address | bit | Description | Signal | Jack No. | Remarks |
|---|---|---|---|---|---|
| P056 | 0 | stapler door open signal | SPLOPN | J3-7 | 1: open |
| | 1 | joint switch open signal | SOP | J3-5 | 1: open |
| | 2 | reed cam switch sensor signal | LCHP | J8-2 | — |
| | 3 | staple absent LED drive signal | HKEMP | J7-10 | 0: staple absent |
| | 4 | shift HP signal | — | — | 1: HP |
| | 5 | guide bar HP signal | SGBHP | J4-6 | 1: HP |
| | 6 | stapling timing sensor signal | SPLACT | J7-4 | — |
| | 7 | stapler HP signal | SPLHP | J7-1 | 1: HP |
| P057 | 0 | guide bar motor drive signal | $\overline{B}$ | — | alternates between 1 and 0 during operation |
| | 1 | guide bar motor drive signal | B | — | |
| | 2 | guide bar motor drive signal | $\overline{A}$ | — | |
| | 3 | guide bar motor drive signal | A | — | |
| | 4 | guide bar motor drive signal | — | — | 1: ON |
| | 5 | watchdog | — | — | — |
| | 6 | manual stapling LED drive signal | $\overline{SPLOK}$ | J7-9 | 0: ON |
| | 7 | staple motor drive signal | SPLMD | J3-2 | 1: ON |
| P058 | 0 | communication signal | — | — | — |
| | 1 | communication signal | — | — | — |
| | 2 | bin shift up signal | — | — | 1: up |
| | 3 | bin shift down signal | — | — | 1: down |
| | 4 | communication signal | — | — | — |
| | 5 | feeder motor clock pulse | FMCLK | J8-5 | — |
| | 6 | communication signal | — | — | — |
| | 7 | feeder motor drive signal | FMD | J6-2 | 1: ON |
| P059 | — | — | — | — | — |
| P060 | — | — | — | — | hexadecimal notation |
| P061 | — | — | — | — | |


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| Address | bit | Description | Signal | Jack No. | Remarks |
|---|---|---|---|---|---|
| P062 | — | — | — | — | hexadecimal notation |
| P063 | — | staple absent detection adjustment VR | — | — | |
| P064 | — | 24V monitor | — | — | |
| P065 | — | bin paper sensor signal | $\overline{BPD}$ | J4-4 | |
| P066 | — | | | | |
| P067 | — | staple absent current (high current area) | — | — | |
| P068 | — | staple absent current (low current area) | — | — | |

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• Cassette Feeding Unit

| Address | bit | Description | Signal | Jack No. | Remarks |
|---|---|---|---|---|---|
| P069 (output) | 0 | switch-back motor drive signal (duplexing unit) | A | J103-B4 | alternates between 1 and 0 during rotation |
| | 1 | switch-back motor drive signal (duplexing unit) | B | J103-B8 | |
| | 2 | switch-back motor drive signal (duplexing unit) | $\overline{A}$ | J103-B5 | |
| | 3 | switch-back motor drive signal (duplexing unit) | $\overline{B}$ | J103-B9 | |
| | 4 | paper guide motor drive signal (duplexing unit) | A | J104-B9 | alternates between 1 and 0 during rotation |
| | 5 | paper guide motor drive signal (duplexing unit) | B | J104-B13 | |
| | 6 | paper guide motor drive signal (duplexing unit) | $\overline{A}$ | J104-B10 | |
| | 7 | paper guide motor drive signal (duplexing unit) | $\overline{B}$ | J104-B14 | |
| P070 (output) | 0 | pick-up roller 3 release solenoid drive signal | $\overline{C3RR}$ | J107-4 | 1: ON |
| | 1 | pick-up roller 4 release solenoid drive signal | $\overline{C4RRL}$ | J112-B8 | 1: ON |
| | 2 | pick-up roller 5 release solenoid drive signal | $\overline{C5RRL}$ | J114-B8 | 1: ON |
| P070 (input) | 3 | cassette feeding motor constant speed signal | PLOCK | J108-2 | 0: constant speed |
| | 4 | cassette 4 paper length sensor signal 1 | C4SZ1 | J113-2 | 1: PS101 ON |
| | 5 | cassette 4 paper length sensor signal 2 | C4SZ2 | J113-1 | 1: PS102 ON |
| | 6 | cassette 5 paper length sensor signal 1 | C5SZ1 | J113-9 | 1: PS101 ON |
| | 7 | cassette 5 paper length sensor signal 2 | C5SZ2 | J113-8 | 1: PS102 ON |
| P071 (input) | 0 | — | — | — | — |
| | 1 | signal for communication with copier | FEED-STOP | J102-4 | — |
| | 2 | signal for communication with copier | FEED-START | J102-5 | — |
| | 3 | paper reversal detection signal | PDP9 | J103-A5 | 0: paper detected |
| | 4 | holding tray paper present signal | | J104-A7 | 0: paper present |


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| Address | bit | Description | Signal | Jack No. | Remarks |
|---|---|---|---|---|---|
| P071 (input) | 5 | cassette 3 paper detection signal | C3PD | J105-7 | 1: paper present |
| | 6 | cassette 4 paper detection signal | C4PD | J112-A5 | 1: paper present |
| | 7 | cassette 5 paper detection signal | C5PD | J114-A5 | 1: paper present |
| P072 (output) | 0 | L paper deflector drive signal (duplexing unit) | LSLD | J104-B2 | 1: ON |
| | 1 | M paper deflector drive signal (duplexing unit) | MSLD | J104-B3 | 1: ON |
| | 2 | S paper deflector drive signal (duplexing unit) | SSLD | J104-B4 | 1: ON |
| | 3 | SS paper deflector drive signal (duplexing unit) | SSSLD | J104-B5 | 1: ON |
| | 4 | stopper plate solenoid drive signal (duplexing unit) | SL3DU | J104-A5 | 1: stopper up |
| | 5 | stopper plate solenoid drive signal (duplexing unit) | SL3DD | J104-A4 | 1: stopper down |
| | 6 | cassette feeding unit speed switch signal | — | J108-3 | 1: low speed (switches automatically to suit copier model) |
| | 7 | cassette feeding unit motor drive signal | PEDMD | J108-1 | 1: ON |
| P073 (output) | 0 | cassette 3 lifter motor drive signal | C3LMD | J106-1 | 1: ON |
| | | feeding roller down solenoid drive signal (duplexing unit) | RDSD | J104-A2 | |
| | 1 | cassette 4 lifter motor drive signal | C4LMD | J112-B1 | 1: ON |
| | 2 | cassette 5 lifter motor drive signal | C5LMD | J114-B2 | 1: ON |
| | 3 | No. 2 paper deflector drive signal (duplexing unit) | $\overline{\text{SL8D}}$ | J103-A8 | 1: ON |
| | 4 | — | — | — | — |
| | 5 | — | — | — | — |
| | 6 | — | — | — | — |
| | 7 | — | — | — | — |

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| Address | bit | Description | Signal | Jack No. | Remarks |
|---|---|---|---|---|---|
| P074 (input) | 0 | cassette 3 paper width detection VR signal | C3PPW | J106-10 | — |
| | 1 | cassette 4 paper width detection VR signal | C4PPW | J113-6 | — |
| | 2 | cassette 5 paper width detection VR signal | C5PPW | J113-13 | — |
| | 3 | cassette 3 lifter position signal | C3LTP | J105-4 | 0: detected |
| | | paper guide HP signal (duplexing unit) | PGHP | J104-B7 | |
| | 4 | cassette 4 lifter position signal | C4LTP | J112-A8 | 0: detected |
| | 5 | cassette 5 lifter position signal | C5LTP | J114-A8 | 0: detected |
| | 6 | — | — | — | — |
| | 7 | — | — | — | — |
| P075 (input) | 0 | — | — | — | — |
| | 1 | paper reversal sensor signal (duplexing unit) | PDP9 | J103-A5 | 0: paper detected |
| | 2 | No. 2 feeder inlet sensor signal (duplexing unit) | PDP8 | J103-A2 | 0: paper detected |
| | 3 | vertical path roller 3 paper detection signal | PDP12 | J107-11 | 1: paper present |
| | 4 | vertical path roller 4 paper detection signal | PDP6 | J112-A2 | 0: paper present |
| | 5 | vertical path roller 5 paper detection signal | PDP7 | J114-A2 | 0: paper present |
| | 6 | No. 2 feeder paper sensor signal (duplexing unit) | PDP | J104-A10 | 0: paper present |
| | 7 | holding tray paper sensor signal (duplexing unit) | — | J104-A7 | 0: paper present |
| P076 (input) | 0 | cassette 3 paper length sensor signal 1 | C3SZ1 | J105-2 | 1: PS101 ON |
| | 1 | cassette 3 paper length sensor signal 2 | C3SZ2 | J105-1 | 1: PS102 ON |
| | 2 | — | — | — | — |
| | 3 | — | — | — | — |
| | 4 | right door close sensor signal | $\overline{\text{RDOD}}$ | J107-8 | 0: open |
| | 5 | left door close sensor signal (duplexing/cassette feeding unit) | $\overline{\text{LFD0}}$ | J103-B2 | 0: open |
| | 6 | duplexing unit insertion detection signal (duplexing unit) | — | J104-A13 | 0: connected |
| | 7 | — | — | — | — |


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| Address | bit | Description | Signal | Jack No. | Remarks |
|---|---|---|---|---|---|
| P077 (output) | 0 | vertical path roller 3 drive signal | $\overline{\text{CL2D}}$ | J107-6 | 1: ON |
| | 1 | vertical path roller 4 drive signal | $\overline{\text{C4VRD}}$ | J112-B6 | 1: ON |
| | 2 | vertical path roller 5 drive signal | $\overline{\text{C5VRD}}$ | J114-B6 | 1: ON |
| | 3 | cassette 3 pick-up signal | $\overline{\text{CL1D}}$ | J107-4 | 1: ON |
| | 4 | cassette 4 pick-up signal | $\overline{\text{C5PU}}$ | J114-B4 | 1: ON |
| | 5 | cassette 5 pick-up signal | $\overline{\text{C4PU}}$ | J112-B4 | 1: ON |
| | 6 | — | — | — | — |
| | 7 | watchdog signal | — | — | — |

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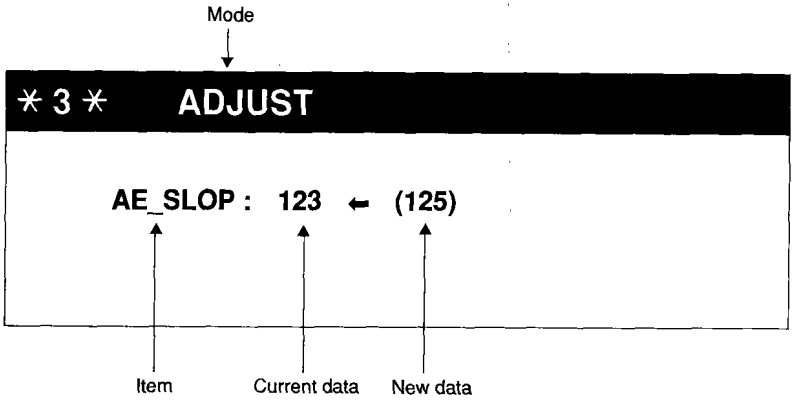
## F. Adjustment Mode ( ✳ 3 ✳ )

- Select the screen using the ▲ or ▼ key.
- Enter the setting using the numeric keypad, or increase/decrease the setting using the ENLARGE/REDUCE key.
- Reverse the +/– notation using the ID key.
- Press the OK key to acknowledge the setting.




| Item | Description | Settings | Remarks |
|---|---|---|---|
| LIGHT_5 | for factory adjustment | — | — |
| AE_SLOP | for adjusting the DC bias for newspapers in AE mode | 0 to 255 | See P. 3-164. |
| AE_LIGHT | for adjusting the scanning lamp drive voltage in AE mode | 0 to 17 | See P. 3-164. |
| REGIST | for adjusting the leading edge margin (registration) | –127 to 127 | See Service Handbook P. 2-1. |
| LE_BLANK | for adjusting the leading edge non-image width (blank) | –127 to 127 | See Service Handbook P. 2-1. |
| FR_BLANK | for adjusting the front margin | 0 to 255 | See Service Handbook P. 2-1. |
| BK_BLANK | for adjusting the rear margin | 0 to 255 | See Service Handbook P. 2-1. |
| TE_BLANK | for adjusting the trailing edge non-image width (blank) | –127 to 127 | See Service Handbook P. 2-1. |
| PRIMARY | for adjusting the primary application voltage correction value | –127 to 127 | enter the value shown on the label in the drum kit |
| BIAS | for adjusting the developing bias (DC component) | –25 to 25 | See P. 3-168. |
| TRN_1 | for factory adjustment | — | — |
| TRN_2DUP | for factory adjustment | — | — |
| TRN_2OVL | for factory adjustment | — | — |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| Item | Description | Settings | Remarks |
|---|---|---|---|
| APVC_STD | for factory adjustment | — | — |
| ATVC_STD | for factory adjustment | — | — |
| IP_OFST | for adjusting the measurement current correction value for APVC | — | enter the value shown on the label in the drum kit |
| PWR_OFST | for high-voltage output correction value | –30 to 30 | enter the value shown in the label on the PCB |
| LMPVTUNE | for factory adjustment | — | — |
| BK_BELT | for factory adjustment | — | — |
| MF_LNGTH | for factory adjustment | — | — |
| BOOK_ERA | for adjusting the book erase width | 15 to 34 | See p. 3-168. |
| DOC_STOP | for adjusting the document stop position (RF in use) | –7 to 7 | See p. 3-169. |
| C1_STMTR | for adjusting the paper width detection width reference point 1 (cassette 1) | 0 to 255 | enter a setting using the numeric keypad |
| C1_A4R | for adjusting the paper width detection width reference point 2 (cassette 2) | 0 to 255 | enter a setting using the numeric keypad |
| C2_STMTR | for adjusting the paper width detection width reference point 1 (cassette 1) | 0 to 255 | enter a setting using the numeric keypad |
| C2_A4R | for adjusting the paper width detection width reference point 2 (cassette 2) | 0 to 255 | enter a setting using the numeric keypad |
| C3_STMTR | for adjusting the paper width detection width reference point 1 (cassette 1) | 0 to 255 | enter a setting using the numeric keypad |
| C3_A4R | for adjusting the paper width detection width reference point 2 (cassette 2) | 0 to 255 | enter a setting using the numeric keypad |
| C4_STMTR | for adjusting the paper width detection width reference point 1 (cassette 1) | 0 to 255 | enter a setting using the numeric keypad |
| C4_A4R | for adjusting the paper width detection width reference point 2 (cassette 2) | 0 to 255 | enter a setting using the numeric keypad |
| C5_STMTR | for adjusting the paper width detection width reference point 1 (cassette 1) | 0 to 255 | enter a setting using the numeric keypad |
| C5_A4R | for adjusting the paper width detection width reference point 2 (cassette 2) | 0 to 255 | enter a setting using the numeric keypad |
| MF_A6R | for adjusting the paper width detection reference point 1 (multifeeder) | 0 to 255 | enter a setting using the numeric keypad |
| MF_A4R | for adjusting the paper width detection reference point 2 (multifeeder) | 0 to 255 | enter a setting using the numeric keypad |
| MF_A4 | for adjusting the paper width detection reference point 3 (multifeeder) | 0 to 255 | enter a setting using the numeric keypad |

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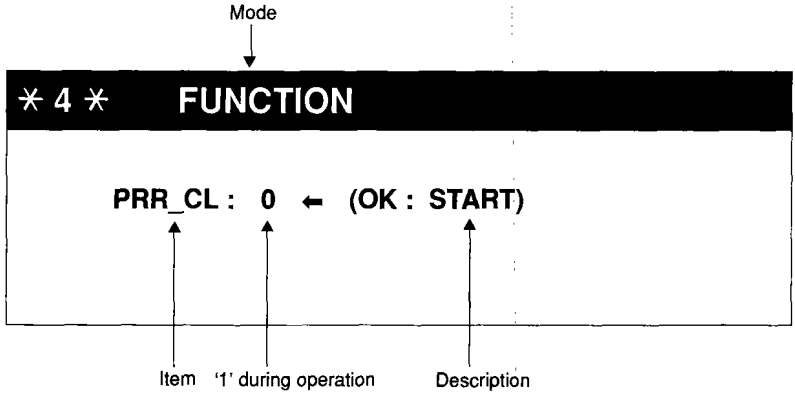
## G. Operation/Inspection Mode ( ✳ 4 ✳ )

- Select the screen using the △ or ▽ key.
- Press the OK key to start the operation.
- Make sure that the copier is in standby state when executing each item of operation.




| Item | Description | Operation/Remarks |
|---|---|---|
| TONER_S | Use it to supply toner at time of installation. | Press the ID key and the OK key in sequence to supply the developing assembly with toner from the hopper; about 6 min. The operation stops automatically.<br>The mode ignores the signal from the developing assembly toner sensor; if you inadvertently executed the operation, switch off the copier immediately. |
| APVC_MR | Use it to measure the APVC at time of installation. | Press the OK key to execute multiple initial rotation (WMUPR), thereby measuring the APVC. |
| BK_ROT | Use it to rotate the developing assembly idly. | Press the OK key to rotate the developing assembly idly for about 6 min. |
| ERROR | Use it to clear E000, E001, E002, or E003. | To clear an E indication, press the OK key: the E indication is cleared and the copier is switched off. |
| DISP_LED | Use it to check the indicators on the control panel. | Press the OK key to cause all LEDs on the control panel to turn off; 3 sec. |
| LCD_CHK | Use it to check the indicators on the LCD. | Press the OK key to cause all indicators on the LCD to turn on and turn off 3 sec.later. |
| SCANLAMP | Use it to check the scanning lamp. | Press the OK key to cause the scanning lamp to remain on for 3 sec. |
| PRE_EXP | Use it to check the pre-exposure lamp. | Press the OK key to cause the pre-exposure lamp to turn on for 3 sec. |
| HPPR_MTR | Cause it to check the operation of the hopper motor. | Press the OK key to rotate the hopper motor to rotate for 3 sec. |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| Item | Description | Operation/Remarks |
|---|---|---|
| AE_ADJ | Use it to adjust AE. | See p. 3-165. |
| PRR_CL | Use it to clean the primary charging roller. | Press the OK key to rotate the main motor, thereby butting the cleaning pad against the primary charging roller to clean the roller. |
| TRR_CL | Use it to clean the transfer roller. | |
| NIP | Use it to adjust the fixing roller nip. | See Service Handbook P. 2-10. |
| BLNKTST | Use it to check the operation of the blank motor. | Place three or more sheets of A3 copy paper on the multifeeder tray, and open the copyboard cover. Press the OK key and then the COPY START key to move the blank shutter and make three copies. |
| C1_STMTR | Use it to execute paper width detection reference point 1 (cassette 1). | See p. 3-170. |
| C1_A4R | Use it to execute paper width detection reference point 2 (cassette 1). | See p. 3-170. |
| C2_STMTR | Use it to execute paper width detection reference point 1 (cassette 2). | See p. 3-170. |
| C2_A4R | Use it to execute paper width detection reference point 2 (cassette 2). | See p. 3-170. |
| C3_STMTR | Use it to execute paper width detection reference point 1 (cassette 3). | See p. 3-170. |
| C3_A4R | Use it to execute paper width detection reference point 2 (cassette 3). | See p. 3-170. |
| C4_STMTR | Use it to execute paper width detection reference point 1 (cassette 4). | See p. 3-170. |
| C4_A4R | Use it to execute paper width detection reference point 2 (cassette 4). | See p. 3-170. |
| C5_STMTR | Use it to execute paper width detection reference point 1 (cassette 5). | See p. 3-170. |
| C5_A4R | Use it to execute paper width detection reference point 2 (cassette 5). | See p. 3-170. |
| MF_A6R | Use it to execute paper width detection reference point 1 (cassette 6). | See p. 3-170. |
| MF_A4R | Use it to execute paper width detection reference point 2 (cassette 6). | See p. 3-170. |
| MF_A4 | Use it to execute paper width detection reference point 3 (cassette 6). | See p. 3-170. |
| RAM_INIT | Use it to initialize the RAM (Q115) on the DC controller PCB. | Press the OK key to initialize the RAM. |

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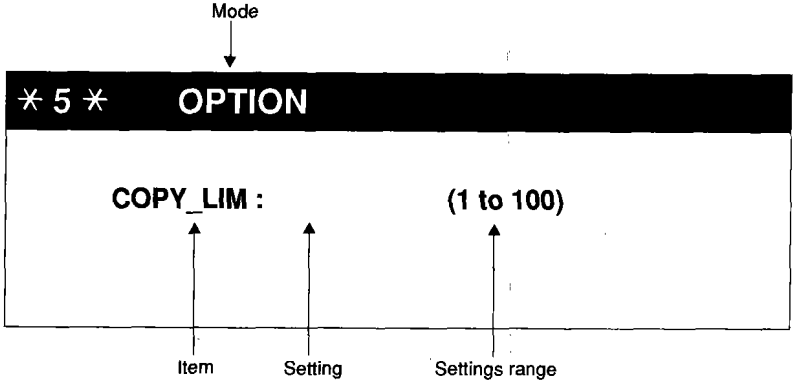
## H. Machine Specifications Settings Mode ( ✳ 5 ✳ )

- Select the screen using the ⊼ or ⊻ key.
- Enter the new setting using the numeric keypad.
- Press the OK key to acknowledge the setting.




| Item | Description | Settings | Remarks |
|---|---|---|---|
| SHUT_OFF | Use it to select or deselect the auto power-off function. | You can deactivate the auto power-off function. | 0: select function<br>1: deselect function |
| DENS_IND | Use it to switch the density notation (9 or 17). | You can select either 9-level or 17-level notation for the LED. | 0: 9-level notation<br>1: 17-level notation |
| SIZE_DET | Use it to select or deselect the size detection function. | You can deactivate the document size detection function. | 0: select function<br>1: deselect function |
| COPY_LIM | Use it to change the copy count upper limit. | You can change the copy count upper limit between 1 and 100. | 1 to 100 |
| U_NOTATI | Use it to change the notation for U size paper. | You can select or deselect paper name indication for U size paper. | 0: U1 thru U4<br>1: paper size name |
| M_NOTATI | Use it to select the method of selecting paper size from the multifeeder. | You can select any paper size regardless of the position of the side guide plate of the multifeeder. | 1: enable selection |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<table>
<tr><th>Item</th><th>Description</th><th>Settings</th><th>Remarks</th></tr>
<tr><td>SPCL_PPR</td><td>Use it to select special paper mode.</td><td>You can change the control temperature for fixing and the output of the static eliminator; see p. 3-39.</td><td>
<table>
<tr><th>Setting</th><th>Control temperature</th><th>Bias</th></tr>
<tr><td>0</td><td>normal mode</td><td rowspan="3">As normally executed.</td></tr>
<tr><td>1</td><td>thick paper mode</td></tr>
<tr><td>2</td><td>thick paper mode (multifeeder only)</td></tr>
<tr><td>3</td><td>normal mode</td><td rowspan="3">If pick-up is from the multifeeder, the output of the static eliminator is applied to the overlay/two-sided output.</td></tr>
<tr><td>4</td><td>thick paper mode</td></tr>
<tr><td>5</td><td>thick paper mode (multifeeder only)</td></tr>
</table>
</td></tr>
<tr><td>CST_GRP1</td><td>Use it to select the notation for U size paper (GRP1).</td><td>You can select the notation to represent the GP1 paper size.</td><td>0: G_LTR<br>1: K_LGL</td></tr>
<tr><td>CST_GRP2</td><td>Use it to select the notation for U size paper (GRP2).</td><td>You can select the notation to represent the GRP2 paper size.</td><td>0: FOOLSCAP<br>1: OFFICIO<br>2: E_OFFICIO<br>3: A_LGL<br>4: A_OFFICIO</td></tr>
<tr><td>CST_GRP3</td><td>Use it to select the notation to represent the U size paper (GRP3).</td><td>You can select the notation to represent the GRP3 paper size.</td><td>0: G_LGL<br>1: FOLIO<br>2: AUS FLS</td></tr>
<tr><td>CST_GRP4</td><td>Use it to select the notation to represent the U size paper (GRP4).</td><td>You can select the notation to represent the GRP4 paper size.</td><td>0: LTR<br>1: A_LTR</td></tr>
<tr><td>WEB</td><td>Use it to select how the cleaning belt should be moved.</td><td>You can double the activation of the cleaning belt solenoid.</td><td>0: default<br>1: double</td></tr>
</table>

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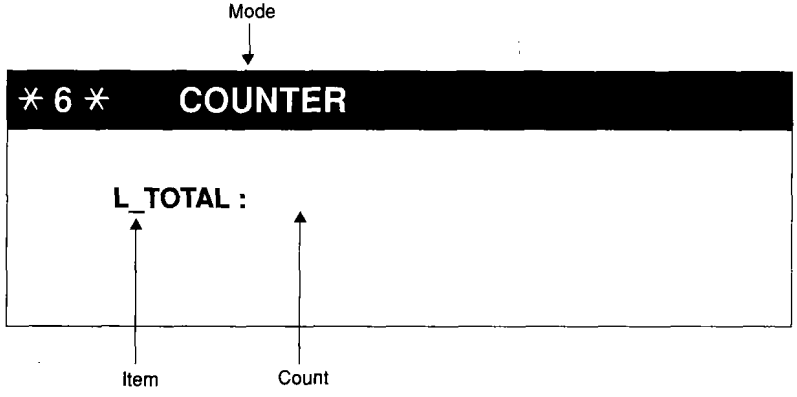
# I. Counter Mode ( ✳ 6 ✳ )

- Select the screen using the ▲ or ▼ key.
- You can clear the counter by pressing the CLEAR key while holding down on the service mode switch (Figure 3-701); make sure that the screen is displayed.




| Item | Description | Remarks |
|---|---|---|
| L_TOTAL | total copy count of large size copies | The count is increased at time of delivery. |
| L_MULTI | copy count of large size copies (pick-up from multifeeder) | |
| L_CST1 | copy count of large size copies (pick-up from cassette 1) | |
| L_CST2 | copy count of large size copies (pick-up from cassette 2) | |
| L_CST3 | copy count of large size copies (pick-up from cassette 3) | |
| L_CST4 | copy count of large size copies (pick-up from cassette 4) | |
| L_CST5 | copy count of large size copies (pick-up from cassette 5) | |
| L_OVERLAY | copy count of large size copies (2nd copying on overlay copy) | |
| L_2_SIDE | copy count of large size copies (2nd side on two-sided copy) | |
| L_DF | document count of large size copies | The count is increased at time of document pick-up. |
| S_TOTAL | total copy count of small size copies | The count is increased at time of delivery. |
| S_MULTI | copy count of small size copies (pick-up from multifeeder) | |
| S_CST1 | copy count of small size copies (pick-up from cassette 1) | |
| S_CST2 | copy count of small size copies (pick-up from cassette 2) | |
| S_CST3 | copy count of small size copies (pick-up from cassette 3) | |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| Item | Description | Remarks |
|---|---|---|
| S_CST4 | copy count of small size copies (pick-up from cassette 4) | The count is increased at time of delivery. |
| S-CST5 | copy count of small size copies (pick-up from cassette 5) | |
| S-OVERLAY | copy count of small size copies (2nd copying on overlay copy) | |
| S_2_SIDE | copy count of small size copies (2nd side on two-sided copy) | |
| S_DF | document count of small size copies | The count is increased at time of document pick-up. |
| SERVICE1 | service copy counter 1 | The count is increased at time of pick-up. |
| SERVICE2 | service copy counter 2 | |
| WEB | number of cleaning belt activations*. | The count is increased each time the cleaning belt solenoid (SL3) turns on. |

* The "REPLACE BELT" message is indicated on the control panel at 250,000.

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# J. Adjustment

## 1. AE Adjustment

You must make the adjustments indicated by a check mark (○) in Table 3-203 whenever you have replaced the scanning lamp, AE sensor, or DC controller PCB; perform the adjustments indicated by △ as necessary.

Before making any adjustments, execute 'AE_ADJ' (✱ 4 ✱ ; automatic adjustment; p. 3-165). If it still fails after several attempts (density F5 and F9 LEDs flash) or if the copy of the Test Sheet made in AE mode are too dark or too light, execute 'AE_LIGHT' (✱ 3 ✱ ; p. 3-166).

**Note:**
These adjustments must be made in the order given.

| No. | Item | After replacement of AE sensor | After replacement of DC controller PCB |
|---|---|---|---|
| 1 | ✱ 4 ✱<br>AE_ADJ | ○ | ○ |
| 2 | ✱ 3 ✱<br>AE_LIGHT | △ | △ |
| 3 | ✱ 3 ✱<br>AE_SLOP | △ | △ |

**Table 3-203**

- In 'AE_ADJ', the AE slope will not be under automatic control, but instead it will be set to its default setting. To adjust the AE slope, execute 'AE_SLOP (✱ 3 ✱ ; p. 3-167) after making the above adjustments.


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- **AE_ADJ ( ✱ 4 ✱ ; AE scanning intensity automatic adjustment)**

1) *Open the front door, and insert the door switch* actuator into the door switch; then, place the Test Sheet NA2 or NB3 on the copyboard, and close the copyboard cover.
   - Wait until WAIT is over.
2) Press the service mode switch (SW501) using a hex key.
   - The copier shows the S mark on its display to indicate that it has entered service mode.
3) Press the ✱ 4 and ✱ keys on the control panel in sequence.
   - The copier enters FUNCTION mode.
4) Select 'AE_ADJ' using the ∧ or ∨ key.
5) Press the OK key.
   - The scanning lamp turns on, and the scanner *moves to the AE position.*
   - The copier executes an AE scan to automatically determine the light intensity for AE scanning.
   - Thereafter, the scanner returns to the home position, and the scanning lamp turns off.

**Reference:**

The copier varies the lamp intensity for AE scanning to vary the output of the AE sensor during AE scanning.

The copier automatically determines the lamp intensity for AE scanning so that the output of the AE sensor will be equivalent to manual copy density 5 when the document (Test Sheet) on the copyboard glass is copied.

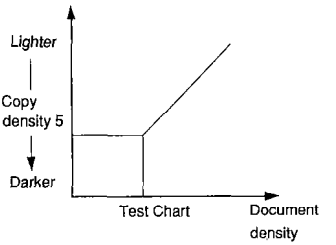
| Item | Function | Description | Remarks |
|---|---|---|---|
| ✱ 4 ✱<br>AE_ADJ | AE scan light intensity adjustment |  | The intensity is automatically adjusted so that copies of a document will be adjusted to copy density 5 for execution of 'AE_AJ'.<br>**Note:**<br>If AE adjustment is not *correct, density* indicator LEDs F5 and F9 flash; try executing the adjustment once again. |

**Table 3-204**

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- **AE_LIGHT ( ✱ 3 ✱ ; AE scanning light intensity)**

1) Open the front door, and insert the door switch actuator into the door switch.
   - Wait until WAIT is over.
2) Press the service mode switch (SW501) using a hex key.
   - The copier shows the S mark on its display to indicate that it has entered service mode.
3) Press the ✱, 3, and ✱ keys on the control panel in sequence.
   - The copier enters ADJUST mode.
4) Select 'AE_LIGHT' using the ∧ or ∨ key.
5) Make the adjustments shown in Table 3-205.

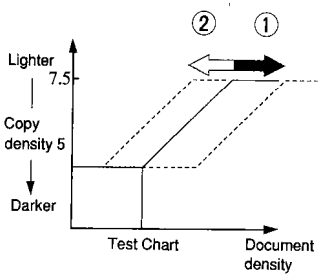
| Item | Function | Description | Remarks |
|---|---|---|---|
| ✱ 3 ✱<br>AE_LIGHT | AE scan light intensity adjustment |  | ① If the setting is lowered in service mode, AE copies will be lighter.<br>② If the setting is raised in service mode, AE copies will be darker. |

**Table 3-205**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• **AE_SLOP (✳ 3 ✳ ; AE slope)**

1) Open the front door, and insert the door switch actuator into the door switch.
   • Wait until WAIT is over.
2) Press the service mode switch (SW501) using a hex key.
   • The copier shows the S mark on its display to indicate that it has entered service mode.
3) Press the ✳, 3, and ✳ keys on the control panel in sequence.
   • The copier enters ADJUST mode.
4) Select 'AE_SLOP" using the ∧ or ∨ key.
5) Make the adjustments shown in Table 3-206.

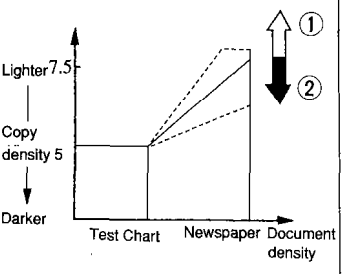
| Item | Function | Description | Remarks |
|---|---|---|---|
| ✳ 3 ✳<br>AE_LIGHT | AE slope |  | ① If the setting is raised in service mode, copies of newspapers will be lighter.<br>② If the setting is lowered in service mode, copies of newspapers will be darker. |

**Table 3-206**

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## 2. Book Frame Erase Width ( ✳ 3 , ✳ BOOK_ERA)

In this mode, you will set how much of the center of a document should be erased when book erasing mode is selected.

You can change the width represented by x in Figure 3-704.

You cannot set how much of the sides of a document should be erased in this mode.

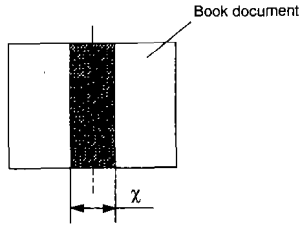


**Figure 3-704**

1) Enter service mode ( ✳ 3 ✳ ), and select 'BOOK_ERA' using the △ or ▽ key; for example, BOOK_ERA: 100 ← ( )
2) Enter a setting using the numeric keypad, or increase/decrease the setting using the ENLARGE/REDUCE key.
   Then, press the OK key to acknowledge the setting.
   Each increment of 1 represents 0.1 mm in book frame erasing mode.

## 3. Developing Bias ( ✳ 3 , ✳ ; BIAS)

Perform the Image Adjustment Basic Procedure.

1) Enter service mode ( ✳ 3 ✳ ), and select "BIAS' using the △ or ▽ key; for example, BIAS: X ← ( )
2) Enter a setting using the numeric keypad, or increase/decrease the setting using the ENLARGE/REDUCE key.
   To change the +/– notation, press the ID key; then, press the OK key to acknowledge the setting.
   - Each increment of 1 represents about 5 V in terms of the output of the developing bias DC component.
   - Increasing the setting decreases the output of the developing bias DC component; on the other hand, decreasing the setting increases the output of the developing bias DC component.
   - The setting may be between –15 and +15.


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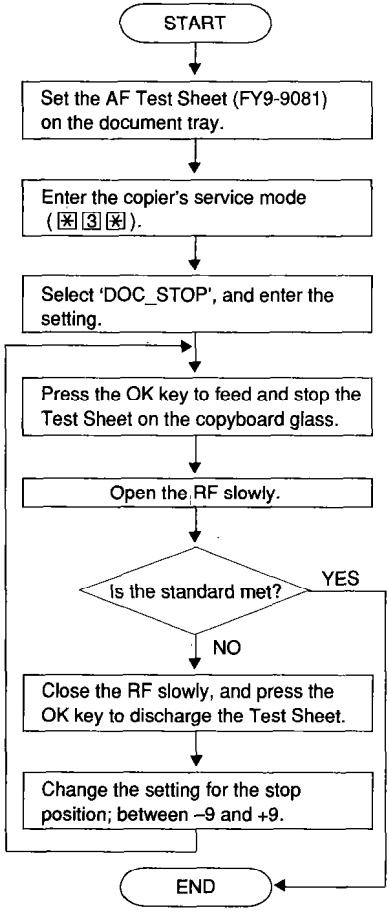
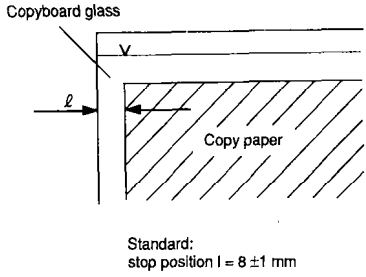
## 4. Document Stop Position w/ RF in Use ( [*] [3] , [*] ; DOC_STOP)


START
Set the AF Test Sheet (FY9-9081) on the document tray.
Enter the copier's service mode ( [*] [3] [*] ).
Select 'DOC_STOP', and enter the setting.
Press the OK key to feed and stop the Test Sheet on the copyboard glass.
Open the RF slowly.
Is the standard met?
YES
NO
Close the RF slowly, and press the OK key to discharge the Test Sheet.
Change the setting for the stop position; between –9 and +9.
END

- Increasing the setting moves the document stop position to the left in increments of 0.33 mm.




Standard
stop position $\ell$ = 8 ±1 mm

**Figure 3-705**

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## 5. Cassette/Multifeeder Paper Width Default Setting ( ✱ 4 ✱ )

You must enter the paper width default settings if

- you have replaced the paper detection VR of the copier or the cassette feeding unit, including the multifeeder.
- you have adjusted the registration for the cassette front and rear.

For cassettes 1 through 5, you must enter settings for 'STMTR' and 'A4R' for each cassette; for multifeeder, you must enter settings for 'A6R', 'A4R', and 'A4'.

### a. Cassettes 1 through 5

1) Open the front door, and insert the door switch actuator into the door switch.
2) Press the service mode switch using a hex key to enter service mode.
3) Select 'STMTR' in service mode ( ✱ 4 ✱ ) to enter the paper width default setting for a specific cassette.

Example

C1 _ STMTR: _ 0 _ (OK: SET)

'1' indicates the number of the selected cassette.

200 — Indicates the default settings to be entered.

'0' indicates that the setting has yet to be entered while '1' indicates that the setting has been entered; '1' is retained until the RESET key is pressed or the copier is switched off.

**Figure 3-248**

4) Slide out the cassette for which the default setting is to be entered, and set the paper guide plate inside the cassette for 'STMTR'.
5) Slide the cassette back into the copier.
6) Check the default setting shown in the display on the control panel.

Example

C1 _ STMTR: _ 0 _ (OK: SET)

15

**Figure 3-249**

7) Press the OK key. The display replaces '0' with '1' to indicate that the default setting for 'STMTR' has been stored.

Example

C1 _ STMTR: _ 0 _ (OK: SET)

15

**Figure 3-250**

8) Press the ☑ key.
'A4R' (paper width default setting) appears on the screen.

Example

C1 _ A4R: _ 0 _ (OK: SET)

115

**Figure 3-251**

9) Slide out the cassette for which the default setting is to be entered, and set the paper guide plate inside the cassette for 'A4R'.
10) Slide the cassette back into the copier.
11) Check the default setting shown in the display on the control panel.

Example

C1 _ A4R: _ 0 _ (OK: SET)

115

**Figure 3-252**

12) Press the OK key. The display replaces '0' with '1' to indicate that the default setting for 'A4R' has been stored.

Example

C1 _ A4R: _ 1 _ (OK: SET)

115

**Figure 3-253**

### b. Multifeeders

1) Open the front door, and insert the door switch actuator into the door switch.
2) Press the service mode switch using a hex key to enter service mode.


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3) Select 'MF_A6R' (paper width default setting) in service mode ( 4 ).

Example
MF _ A6R: _ 0 _ (OK: SET)
'0' indicates that the setting has yet to be entered.
45
Indicates the setting to be stored.

**Figure 3-254**

4) Move the manual guide plate on the multifeeder to suit A6R (105 mm).

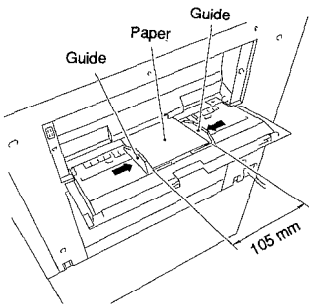


**Figure 3-255**

Example
MF _ A6R: _ 0 _ (OK: SET)

28

**Figure 3-256**

5) Press the OK key. The display replaces '0' with '1' to indicate that the default setting for 'A6R' has been indicated.

Example
MF _ A6R: _ 1 _ (OK: SET)

28

**Figure 3-257**

6) Press the ☑ key. 'MF_A4R' (paper width default setting) appears on the display.

Example
MF _ A6R: _ 0 _ (OK: SET)

28

**Figure 3-258**

7) Move the manual guide plate of the multifeeder to suit A4R (210 mm).

Example
MF _ A4R: _ 0 _ (OK: SET)

143

**Figure 3-259**

8) Press the OK key. The display replaces '0' with '1' to indicate that the default setting for 'A4R' has been stored.

Example
MF _ A4R: _ 1 _ (OK: SET)

143

**Figure 3-260**

9) Press the ☑ key. 'A4' (paper width default setting) appears on the display.

Example
MF _ A4R: _ 0 _ (OK: SET)

143

**Figure 3-261**

10) Move the manual guide plate of the multifeeder to suit A4 (297 mm).

Example
MF _ A4R: _ 0 _ (OK: SET)

237

**Figure 3-262**

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11) Press the OK key. The display replaces '0' with '1' to indicate that the default setting has been stored.

Example
MF _ A4R: _1 _ (OK: SET)

237

**Figure 3-263**

**Note:**
Record all new settings in the Service Label. If you have replaced the DC controller PCB, do not perform the work, but instead enter the setting recorded in the Service Label in service mode ( * 3 * ).

**Reference:**

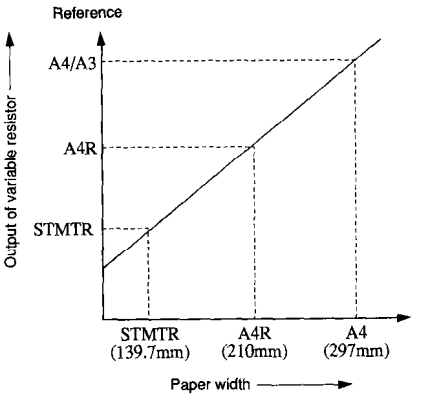


**Figure 7-264**


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# VIII. SELF DIAGNOSIS

The microprocessor on the copier's DC controller PCB is provided with a mechanism that checks the condition of the machine, sensors in particular; when it has found a fault and identified an error, it indicates an error code on the display or activates error auto power-off or error shut-off.

## A. Copier's Self Diagnosis Mechanism

| Code | Cause | Description |
|---|---|---|
| **E000** | • thermistor (TH1; off contact, poor contact, open circuit)<br>• heater (H1, H2; open circuit)<br>• thermoswitch (TS1; open circuit)<br>• SSR (faulty)<br>• DC controller PCB (faulty) | The temperature of the upper fixing roller does not reach 40°C within 27 sec after power-on; see Notes 1 and 2.<br>If 'E000' is detected, the POWER switch is turned off and all power supply is cut in 2 sec. |
| **E001** | • thermistor (TH1; short circuit)<br>• SSR (faulty)<br>• DC controller PCB (faulty) | The temperature of the upper fixing roller exceeds 220°C; see Notes 1 and 2.<br>When 'E001' is detected, the POWER switch is turned off and all power supply is cut off in 2 sec. |
| **E002** | • thermistor (TH1; poor contact, open circuit)<br>• heater (H1, H2; open circuit)<br>• thermoswitch (TS1; open circuit)<br>• SSR (faulty)<br>• DC controller PCB (faulty) | • The temperature does not reach 75°C within 20 sec after it has reached 40°C.<br>• The temperature does not reach 100°C within 14 sec after it has reached 75°C.<br>• The temperature does not reach 120°C within 12 sec after it has reached 75°C.<br>• The temperature does not reach 140°C within 12 sec after it has reached 120°C.<br>• The temperature does not reach 160°C within 12 sec after it has reached 140°C.<br>• The temperature does not reach 170°C within 8 sec after it has reached 160°C.<br>• The temperature does not reach 180°C within 8 sec after it has reached 170°C.<br>• The temperature does not reach 185°C within 7 sec after it has reached 180°C.<br>• The temperature does not reach 190°C within 7 sec after it has reached 185°C.<br>**Notes 1, 2:**<br>When 'E002' is detected, the POWER switch is turned off and all power is cut in 2 sec. |
| **E003** | | The fixing temperature lowers to 100°C or less after it has reached the specified temperature.<br>**Notes 1, 2:**<br>When 'E003' is detected, the POWER switch is turned off and all power is cut in 2 sec. |

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| Code | Cause | Description |
|---|---|---|
| **E004** | • SSR (short circuit; error)<br>• heater (H1, H2; open circuit)<br>• thermoswitch (TS1; open circuit) | The activation of the SSR is detected while the heater (H1, H2) is OFF at power-on.<br>When 'E004' is detected, the POWER switch is turned off and all power is cut in 2 sec. |
| **E010** | • main motor (faulty)<br>• main motor driver PCB (faulty)<br>• DC controller PCB (faulty) | Inputs of 2 pulses or more are not received within 1 sec after the main motor drive signal has been generated. |
| **E030** | • counter (open circuit)<br>• DC controller PCB | A check is maid immediately before the counter turns on or off. (normal if the counter drive signal is '0' when the counter is on; normal if the signal is '1' when the counter is on.) |
| **E031** | • option counter (open circuit)<br>• DC controller PCB | A check is maid immediately before the counter turns on or off. (normal if the counter drive signal is '0' when the counter is on; normal if the signal is '1' when the counter is on.) |
| **E064** | • composite power supply PCB (faulty)<br>• DC controller PCB (faulty)<br>• wiring (short circuit) | There is a large difference between the output of the microprocessor (Q401) on the composite power supply PCB and the return signal. |
| **E065** | • composite power supply PCB (faulty)<br>• DC controller PCB (faulty)<br>• wiring (short circuit) | The microprocessor (Q401) on the composite power supply PCB detects high-voltage leakage. |
| **E202** Note 3 | • scanner home position sensor (PS1; faulty)<br>• scanner motor (M2; faulty)<br>• motor driver PCB (faulty) | • The scanner home position signal (SCHP) does not go '1' within 10 sec after the POWER switch or the door switch is turned on.<br>• The scanner takes 10 sec or more to make a round trip (SCFW+SCREV). |
| **E203** | • scanner home position sensor (PS1)<br>• DC controller PCB (faulty) | The scanner home position signal (SCHP) is generated 2 pulses or more within 0.5 sec when the scanner motor turns on. |
| **E204** Note 3 | • scanner home position sensor (PS1; faulty)<br>• motor driver PCB (faulty) | The home position signal does not turn off after the scanner has started to move forward. |


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| Code | Cause | Description |
|---|---|---|
| **E210** | • lens X home position sensor (PS16; faulty)<br>• lens X drive motor (M6; faulty)<br>• DC controller PCB (faulty) | • The lens home position signal (LXHP) is not generated within 9 sec after the lens motor has started to rotate in response to the activation of the POWER switch or the door switch.<br>• The lens home position signal (LXHP ) does not turn off within 1 sec after it has been generated. |
| **E212** | • lens Y home position sensor (PS17; faulty)<br>• lens Y drive motor (M7; faulty)<br>• DC controller PCB (faulty) | • The lens home position signal (LYHP) is not generated within 9 sec after the lens motor has started to rotate in response to the activation of the POWER switch or the door switch.<br>• The lens home position signal (LYHP ) does not turn off within 1 sec after it has been generated. |
| **E220** | • scanning lamp<br>• composite power supply PCB<br>• DC controller PCB | • The scanning lamp does not turn on 0.5 sec after the DC controller PCB has generated the scanning lamp drive signal.<br>When 'E220' is detected, the POWER switch is turned off and all power is cut in 2 sec. |
| **E224** | • blank shutter motor (m8, M9; faulty)<br>• blank shutter home position sensor (PS12, PS13; faulty) | The blank shutter home position signal (BLFHP, BLBHP) is not generated within 7 sec after the POWER switch has been turned on.<br>• The blank shutter home position signal (BLFHP, BLBHP) does not turn off within 1 sec after it has been generated. |
| **E240** | • DC controller PCB | • There is an error in the communication between the microprocessor master (Q102) and microprocessor slave (Q109). |
| **E244** | • DC controller PCB (faulty)<br>• composite power supply PCB (faulty)<br>• harness (composite power supply PCB to/from DC controller PCB; faulty) | The communication between the microprocessor (Q401) on the composite power supply PCB and the DC controller PCB is absent for 5 sec or more. |
| **E710** | • DC controller PCB (faulty) | Q115 on the DC controller PCB cannot be initialized at time of power-on. |
| **E711** | • DC controller PCB (faulty) | Q115 on the DC controller PCB fails at power-on. |
| **E712** | Feeder Error<br>• RF controller PCB (faulty)<br>• connector (poor connection)<br>• power supply PCB for options (faulty) | The IC for communication on the RF controller PCB has failed. |

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| Code | Cause | Description |
|---|---|---|
| **E716** | Cassette Feeding Unit Error<br>• cassette feeding unit controller PCB (faulty)<br>• connector (poor connection)<br>• 24V power supply PCB (faulty) | The IC for communication on the cassette feeding unit PCB has failed; a communication error has occurred. |
| **E800** | • auto power-off (open circuit)<br>• DC controller | An open circuit in the auto power-off circuit has been detected. |

**Note:**

1. To reset the copier after its self diagnosis mechanism has been activated, switch the copier off and then on. If 'E000', 'E001', 'E002', or 'E003' is indicated, you must select 'ERROR' in service mode ( ✱ 4 ✱ ), and press the OK key. This is to prevent the user from casually resetting the copier when the thermistor may be faulty; otherwise, the roller inside the fixing assembly would become overheated and damaged.
2. If a problem associated with 'E000', 'E001', 'E002', or 'E003' has been detected, the copier indicates an error code and, at the same time, forces itself off about 20 sec later.
3. You can check problems associated with 'E202' or 'E204' under 'ERR in service mode ( ✱ 1 ✱ ).


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## B. Error Auto Power-Off (copier)

The copier activates error auto power-off under the conditions given in the following table.

| Main cause | Timing |
|---|---|
| E000, E001, E002, E003, E004, E220 (E code on display) | 2 sec after detection of E000, E001, E002, E003, or E220 |
| E000, E001, E002l, or E003 without resetting (E code on display) | about 20 sec after power-on |
| scanning lamp (no E code on display) | |
| thermal fuse (FU1; no E code on display) | |

## C. Error Auto Shut-Off (copier)

The copier activates error auto power-off under the conditions given in the following display.

| Main cause | Timing |
|---|---|
| E244 (E code on display) | 5 sec after detection of E244 |

**Reference:**

- Auto Power-Off
  You can select *auto power-off* in user mode so that the mode will be activated to switch off the copier.
- Error Auto Power-Off
  The copier's protection mechanism (self diagnosis, for example) will be activated to shut off the copier.
- Error Auto Shut-Off
  The copier's protection mechanism (self diagnosis, for example) will be activated to switch off all outputs; although the POWER switch remains on, the indicators on the control panel will turn off.

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## D. Self Diagnosis (Cassette Feeding Unit)

| Code | Cause | Description |
|---|---|---|
| **E901** | • cassette feeding unit motor (M1; faulty)<br>• cassette feeding unit controller PCB (faulty) | Inputs of the motor clock signal are not received within 1 sec after the cassette feeding unit motor drive signal has been generated. |
| **E902** | • paper guide home position sensor (PS5; faulty)<br>• paper guide drive motor (faulty)<br>• cassette feeding unit controller PCB (faulty) | • If the home positions sensor (PS5) is off,<br>→The home position sensor signal (PGHP) is not generated after driving the paper guide drive motor toward the home position for 1200 pulses.<br>• If the home position sensor (PS5) is on,<br>→The home position sensor signal (PGHP) does not turn off after the paper guide driving the paper guide drive motor from the home position for 100 pulses. |


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## E. Self Diagnosis (RF/ADF)

| Code | Cause | Description |
|---|---|---|
| **E400** | • data communication with copier (error) | The data communication is monitored at all times; the error is identified if the communication with the copier is absent for 5 sec or more. |
| **E401** | • pick-up motor (fails to rotate)<br>• pick-up roller sensor (faulty) | A flag is attached to the shaft of the pick-up motor, and the rotation of the pick-up motor is monitored with the flag blocking the roller sensor; the error is identified if PS3 does not turn on and off twice or more within 1 sec. |
| **E402** | • belt motor (fails to rotate)<br>• belt motor clock sensor (faulty) | The belt clock pulses within 200 msec are below the specified number. |
| **E403** | • feeder motor (fails to rotate)<br>• feeder motor clock sensor (faulty) | The feeder motor clock pulses within 200 msec are below the specified number. |
| **E404** | • delivery motor (fails to rotate)<br>• delivery motor clock sensor (faulty) | The delivery motor clock pulses within 200 msec are below the specified number. |
| **E411** | • document detection (faulty)<br>• registration sensor (faulty)<br>• document edge sensor (faulty) | The output of the sensor is 2.3 V or more in the absence of paper. |

**Note:**
To reset the copier after activation of the self diagnosis mechanism, switch the copier off and then on. You can still continue to make copies even when the RF is out of order; simply open the RF, and set the documents on the copyboard glass.

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## F. Self Diagnosis (sorter)

| Code | Cause | Description |
|---|---|---|
| **E500** | The CPU or the communications IC on the sorter controller is not operating normally. | An error is detected in the communication between the sorter and the copier. |
| **E510** | The feeder motor fails to rotate. | The clock signal from the motor is off for 250 msec or more. |
| **E530** | The stapler guide bar swing motor fails to rotate. | The home position sensor does not turn off after generation of 2560 pulses of the motor drive signal. |
| **E531** | The stapler unit swing motor fails to rotate. | • The stapler unit swing sensor does not turn off within 500 msec after generation of the motor drive signal.<br>• The sensor does not turn on again within 1000 msec after the stapler unit swing sensor has turned off. |
| **E540** | The bin shift motor fails to rotate. | • The reed cam home position sensor does not turn off within 2000 msec after generation of the motor drive signal.<br>• The reed cam home position sensor does not turn on once again within 2000 msec after it has turned off. |
| **E541** | • Bin motor (faulty)<br>• Reed cam drive gear (faulty mounting) | The reed cam position sensor does not turn on within 1.0 sec after it has turned off. |


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## ■ Resetting after Detection of an Error

If the copier is making copies,

① The copier indicates the 'JAM' message.
② When you reset the copier, it will indicate the 'TURN POWER OFF AND ON' message.
③ When you turn off and then on the copier, it runs a self check; if the result is good, it will be reset. Otherwise, the copier enters down state*, indicating 'E5XX' in its display.

If the copier is not making copies,

① The copier indicates the 'TURN POWER OFF AND ON' message.
② When you turn off and then on the copier, it runs a self check; if the result is good, it will be reset. Otherwise, the copier enters down state*, indicating 'E5XX' in its display.

• Down State Operations

① The copier indicates 'E5XX'.
② You can continue to make copies after detaching the sorter*; you will not, however, be able to use modes that call for sorter functions.
③ If you select modes that call for a sorter, the copier indicates the 'MODE NOT AVAILABLE' message.

**Note:**
**You can reset the copier while it is in down state if the result of its self check is good after you have turned off and on the copier.**

* State in which the copier indicates an E code.
** Simply turn off the joint sensor; you need not disconnect the power plug.

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# I. EXTERNALS

## A. External Covers

**Note:**
The number in parentheses indicates the number of mounting screws used.
Detach the covers as necessary when cleaning, inspecting, or repairing the inside of the copier.
Covers that can be detached by mere removal of mounting screws are left out of the discussions.

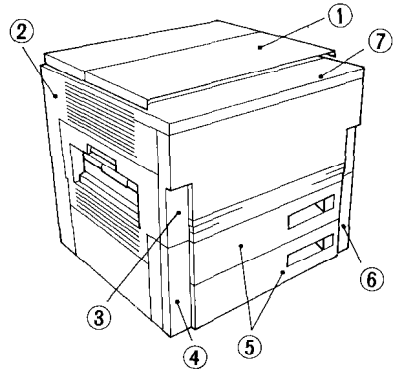


**Figure 4-100**

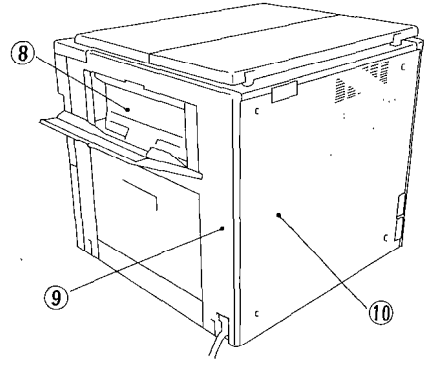


**Figure 4-101**

① Copyboard cover
② Left cover (2)
③ Front door
④ Front left cover (2)
⑤ Cassette
⑥ Front right cover (2)
⑦ Control panel
⑧ Multifeeder cover (2)
⑨ Right cover (5)
⑩ Rear cover (4)

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## B. Control Panel

### 1. Detaching the Control Panel

1) Open the front cover.
2) Remove the two screws ① and two pins ②; then, detach the front cover.

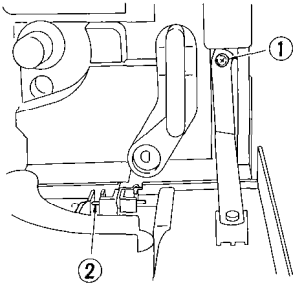


Figure 4-102

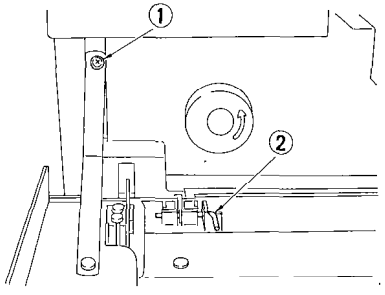


Figure 4-103

3) Open the hopper.
4) Remove the three screws, and detach the fixing knob ④; then, detach the left inside cover.

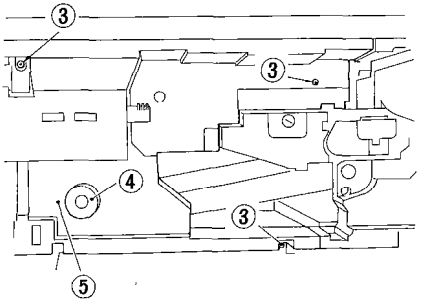


Figure 4-104

5) Detach the feeding assembly release lever ⑥, connector cover ⑦, and registration knob ⑧; then, remove the two screws ⑨, and detach the right inside cover.

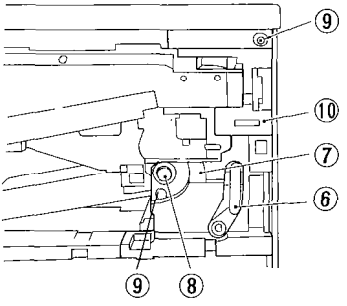


Figure 4-105


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6) Detach the harness ⑫ from the harness retainer.

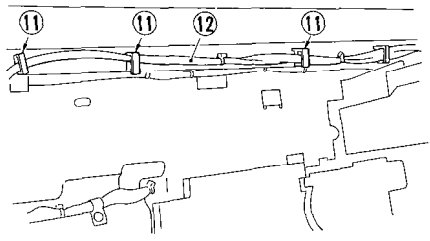


Figure 4-106

7) Disconnect the four connectors ⑬.

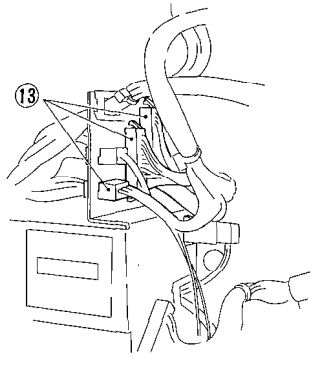


Figure 4-107

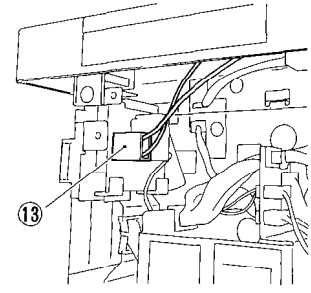


Figure 4-108

8) Remove the three screws ⑭.

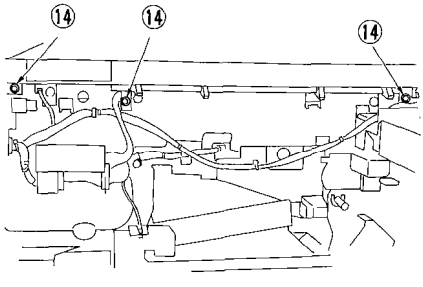


Figure 4-109

9) Remove the magnet plate retainer, and detach the control panel ⑯.

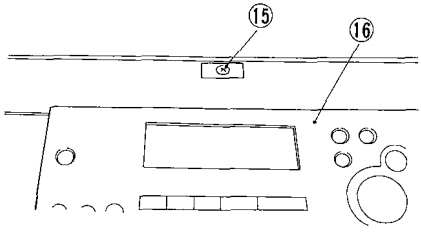


Figure 4-110

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## C. Copyboard Cover

### 1. Replacing the Copyboard Sheet

The copyboard sheet is attached to the copyboard cover using adhesive tape. Simply pull on its corners to detach.

After placing a new copyboard sheet, lightly press on the sheet so that its entire area is in firm contact with the copyboard.

## D. Fans

### 1. Outline

The copier is equipped with three fan motors to operate the fans used to circulate the air and prevent overheating inside the copier.

The function of each of these fans is as follows:

| | |
|---|---|
| scanner cooling fan (FM1): | cools the scanner. |
| exhaust fan (FM2): | discharges the air to the outside of the machine. |
| feeding fan (FM3): | moves copy paper. |

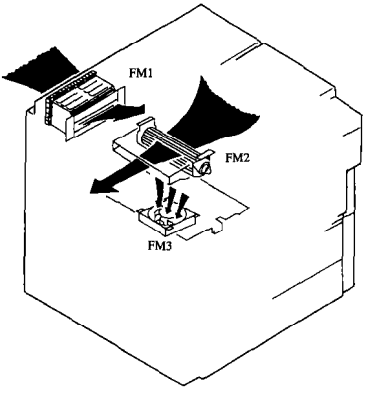


**Figure 4-111**


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## 2. Detaching the Scanner Cooling Fan

1) Detach the rear cover.
2) Disconnect the connector (①; J36).
3) Detach the harness ③ from the harness retainer ②.
4) Remove the four mounting screws ④, and detach the scanner cooling fan ⑤.

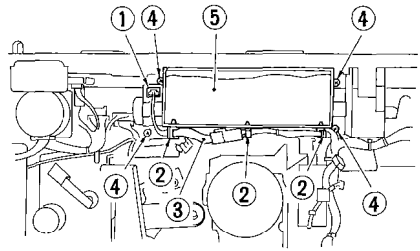

Figure 4-112

## 3. Detaching the Exhaust Fan

1) Detach the left inside cover.
2) Disconnect the connector ①, and put the connector inside the machine.

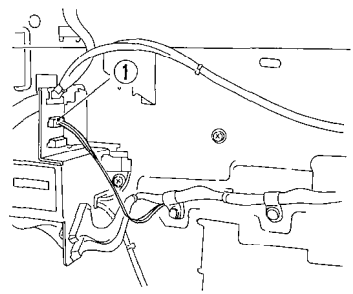

Figure 4-113

3) Detach the fixing assembly.
4) Remove the two screws ②, and detach the fan ③ together with the duct into the direction of delivery.

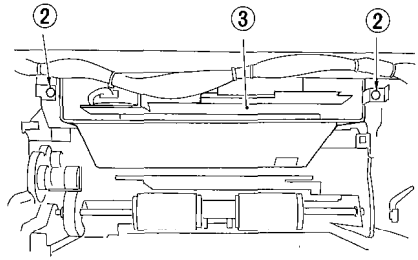

Figure 4-114

## 4. Feeding Fan

See p. 4-35.

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# II. DRIVE SYSTEM

## A. Lens Drive Assembly

### 1. Detaching the Lens Y Drive Motor

1) Detach the copyboard glass.
2) Move the No. 1 mirror mount to the right end of the scanner rail.

**Note:**
**Be sure to hold the center of the No. 1 mirror mount when moving it.**

3) Mark the position ② of the Y belt gear support ① at the front using a scriber.

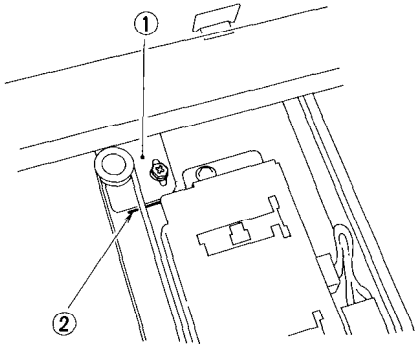


**Figure 4-200**

4) Loosen the screw ③ on the Y belt gear support to loosen the Y drive bet.

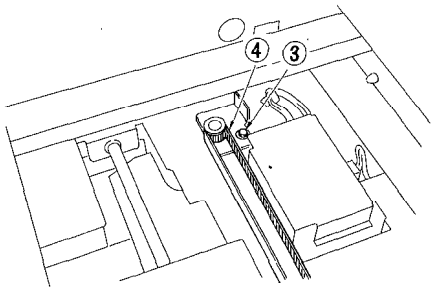


**Figure 4-201**

5) Detach the Y drive belt from the Y motor gear.
6) Disconnect the connector (⑤; J42).
7) Remove the two mounting screws ⑥, and detach the lens Y drive motor together with the support ⑦.

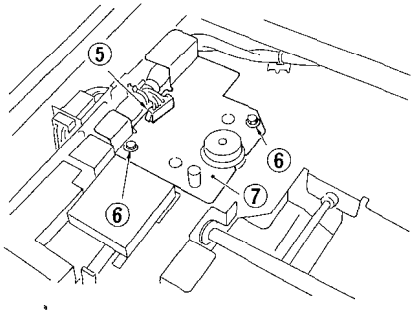


**Figure 4-202**


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8) Remove the two mounting screws ⑧, and detach the motor from the support.

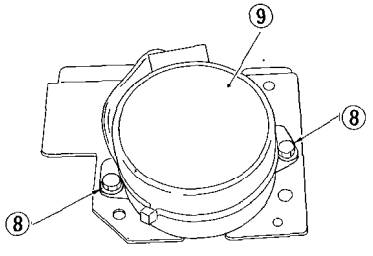


Figure 4-203

## 2. Detaching the Lens Base

1) Detach the copyboard cover.
2) Remove the screw, and detach the lens hood ②.

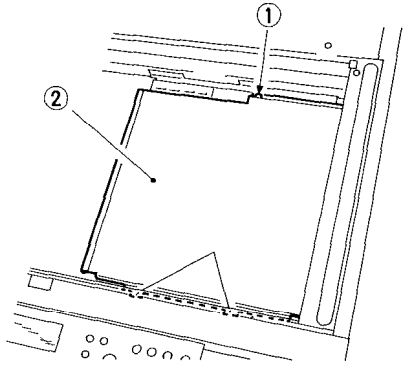


Figure 4-204

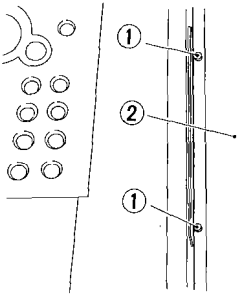


Figure 4-205

3) Detach the lens Y drive belt ③ from the belt joint ④.

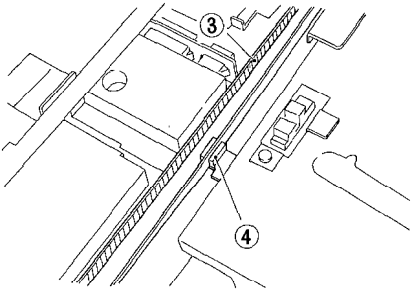


Figure 4-206

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4) Remove the screw ⑤, and detach the light-blocking belt retainer (⑥; on lens mount).

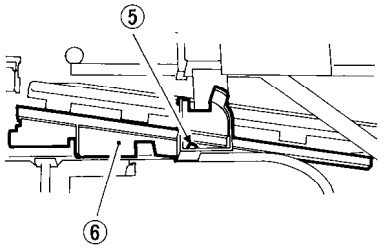


**Figure 4-207**

5) Remove the screw ⑨, and detach the light-blocking belt (rear; ⑩); tape the detached light-blocking belt mount to the lens base for the time being.

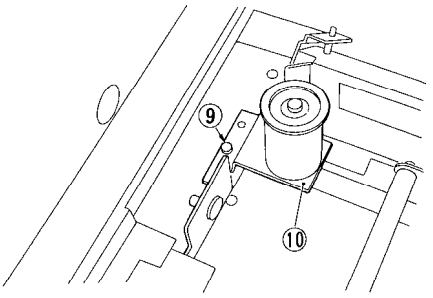


**Figure 4-208**

6) Remove the screw ⑪, and detach the light-blocking belt mount (front; ⑫); tape the detached light-blocking belt mount to the lens base for the time being.

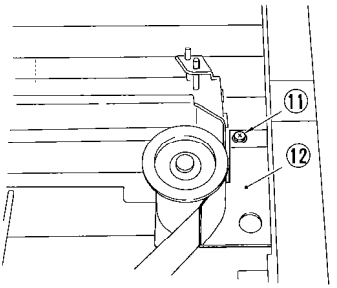


**Figure 4-209**

7) Lift the lens base ⑬, and detach the bushing from the rail ⑮.

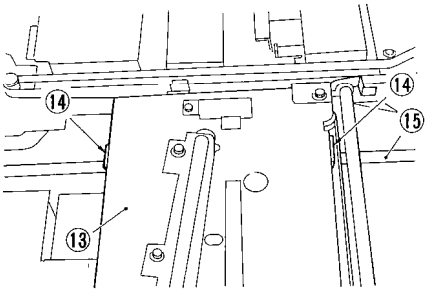


**Figure 4-210**


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8) Disconnect J90 ⑯, J89 ⑰, and J13 ⑱.

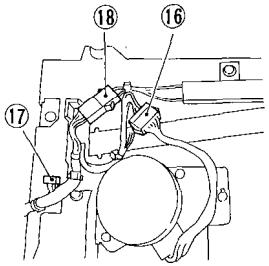


Figure 4-211

## 3. Detaching the Lens X Drive Motor

1) Detach the lens base.
2) Remove the two screws ③, and detach the motor mount ①.

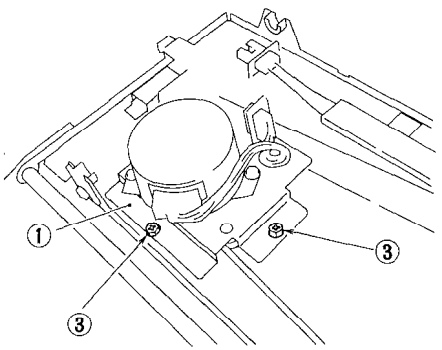


Figure 4-212

3) Remove the two screws ④, and detach the motor ⑤ from the motor mount.

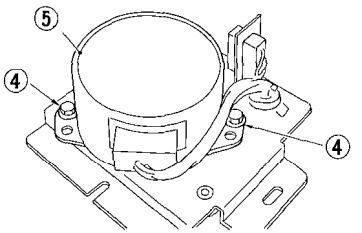


Figure 4-213

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## 4. Attaching the Lens X Drive Belt

Move the lens X drive motor ② into the direction of the arrow to make adjustments; push the lens X drive belt ① at the point shown in Figure 4-214 with a 4-mm spring gauge until the reading of the gauge is 30±10 g.

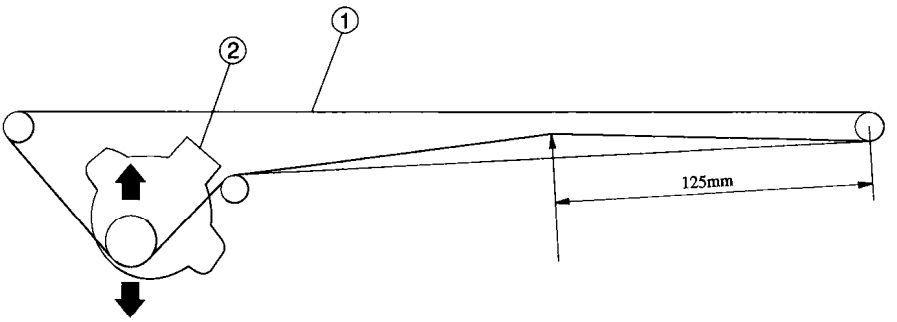
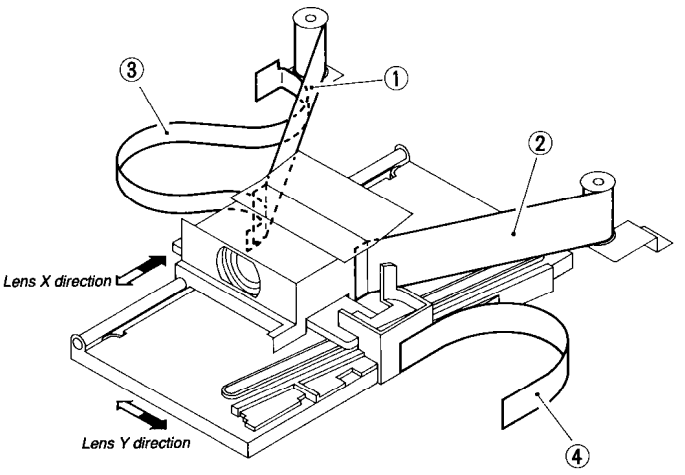



**Figure 4-214**

## 5. Attaching the Light-Blocking Belt




① Light-blocking belt 1
② Light-blocking belt 2
③ Light-blocking belt 3
④ Light-blocking belt 4

**Figure 4-215**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### 6. Replacing the Light-Blocking Belt

1) Wind the belt ① clockwise around the bobbin ②; then, fix it in position using tape.

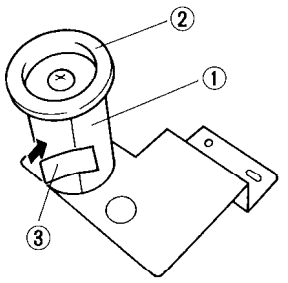


Figure 4-216

2) Fix the light-blocking belt mount to the lens mount.
3) Give the bobbin about half a turn in both clockwise and counterclockwise directions, and release it, thereby freeing the spring inside the bobbin.
4) Turn the bobbin 2 to 2.5 times clockwise, and detach the tape; then, pull out the end of the belt.
5) Attach the end of the belt to the lens using two clips.

## B. Scanner Drive Assembly

### 1. Detaching the Scanner Drive Motor

1) Detach the rear cover.
2) Disconnect J207 ① from the motor driver.

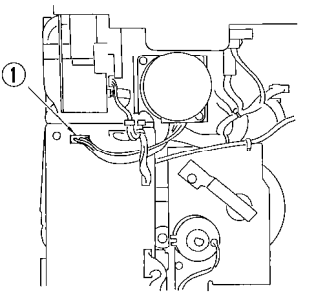


Figure 4-1217

3) Remove the four screws ②, and detach the scanner drive motor ③.

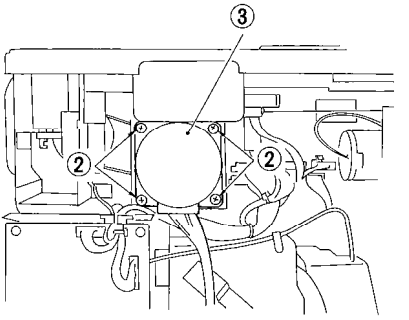


Figure 4-218

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## 2. Diagram of the Scanner Drive Cable

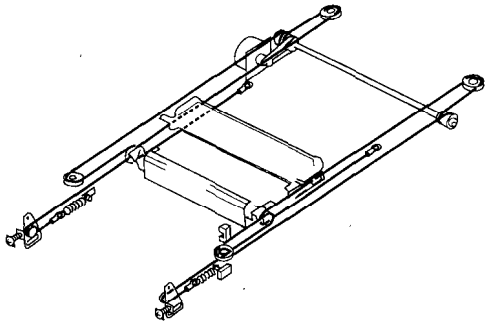

Figure 4-219

## 3. Detaching the Scanner Drive Cable

1) Detach the copyboard cover, right cover, left cover, upper rear cover, and rear cover.
2) Detach the copyboard glass.
3) Detach the control panel.
4) Remove the two screws ①, and detach the power switch mount ②.

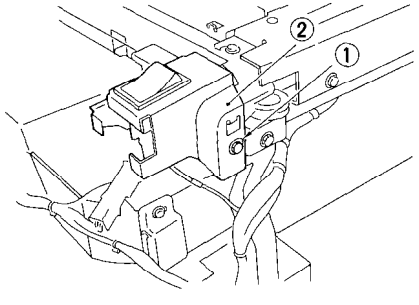


Figure 4-220

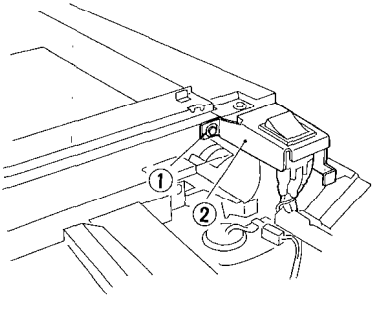


Figure 4-221

5) Detach the pulley cover ③.

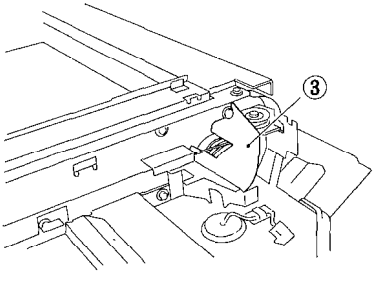


Figure 4-222


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6) Remove the four screws ④, and detach the upper left stay ⑤.

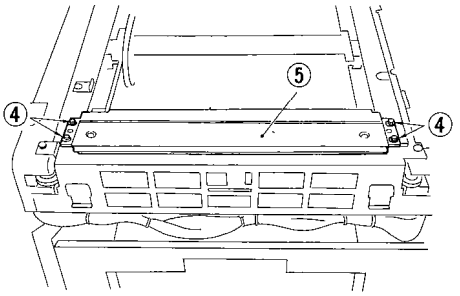


**Figure 4-223**

7) Detach the scanner cooling fan.
8) Remove the three screws ⑥, and detach the front glass support ⑦.

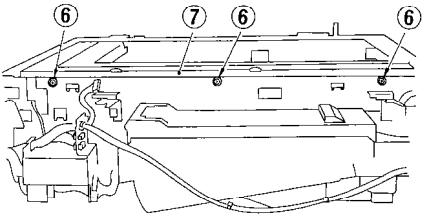


**Figure 4-224**

9) Disconnect the connector ⑧, and remove the screw ⑨; then, detach the copyboard support ⑩.

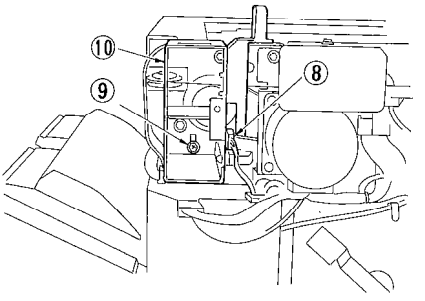


**Figure 4-225**

10) Remove the four screws ⑪, and detach the rear glass support ⑫.

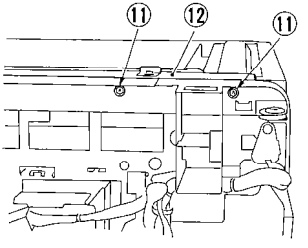


**Figure 4-226**

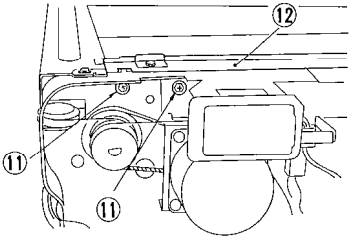


**Figure 4-227**

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11) Mark the position of the pulley plate ⑬ on the side plate (both front and rear).

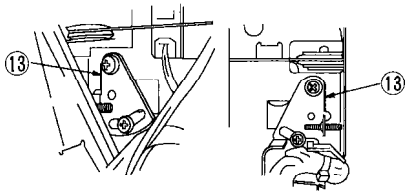


**Figure 4-228**

12) Move the No. 1 mirror mount in the forward direction, and match the angular hole in the side plate and the cable fixing screw ⑭.
Then, remove the two cable fixing screws ⑭, and separate the No. 1 mirror mount and the scanner cable (both front and rear).

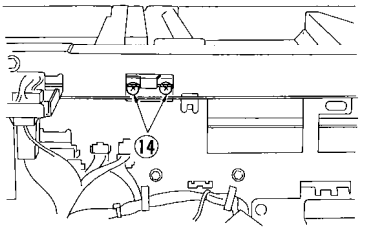


**Figure 4-229**

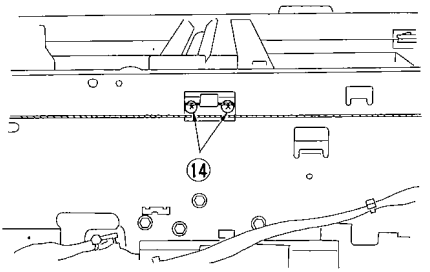


**Figure 4-230**

13) Loosen the pulley plate fixing screw ⑮; then, loosen the tension screw ⑯, and loosen the scanner cable (both front and rear).

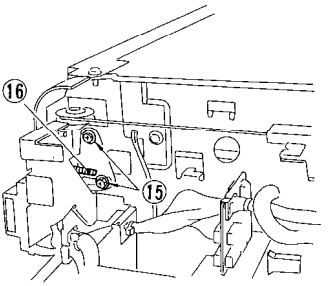


**Figure 4-231**


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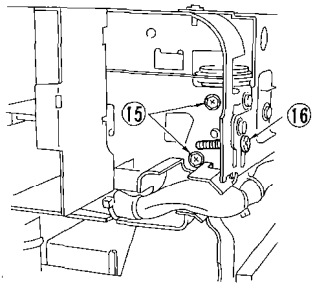


Figure 4-232

14) Detach the scanner cable (both front and rear).

## 4. Stringing the Scanner Cable

**Note:**
You will need the mirror positioning tool (FY9-3002-000) when stringing the scanner cable.

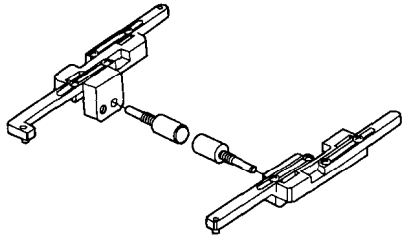

Figure 4-233

You may use the same tool for other models of copiers; when using it for the copier, extend the two arms at both front and rear fully and screw them in place before starting the work.

1) Move the No. 2 mirror mount until the pulley shaft ① of the No. 2 mirror mount is visible through the long hole in the side plate.

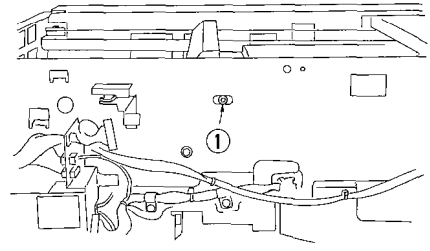


Figure 4-234

2) Insert a binding screw (②; M4) into the screw hole in the pulley shaft, and fix the No. 2 mirror mount to the side plate (both front and rear).

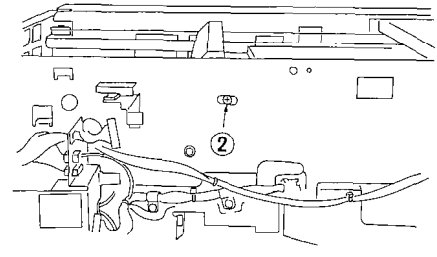


Figure 4-235

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3) Engage the scanner cable on the pulleys and hooks as shown in Figure 4-236.

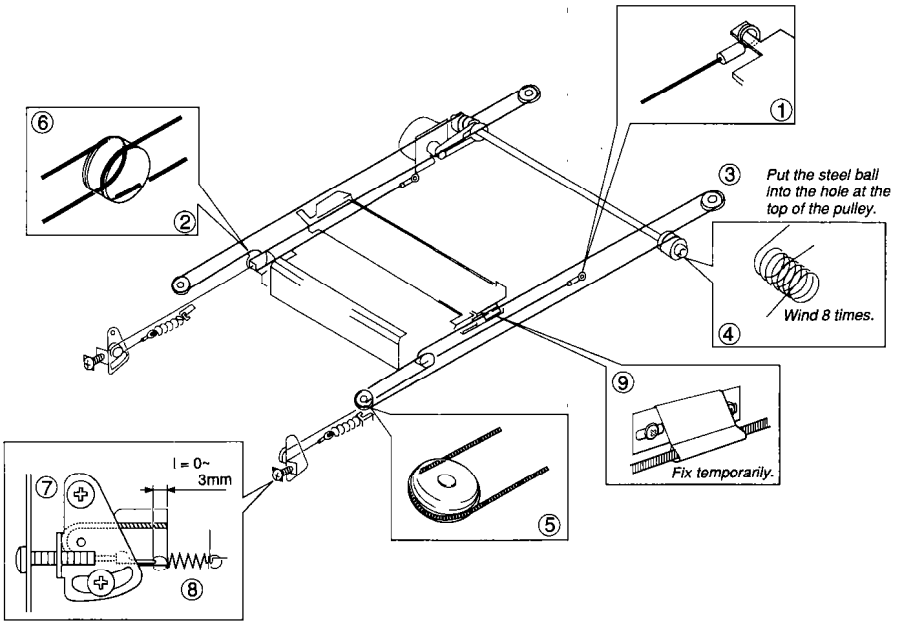


**Figure 4-236**

4) Remove the binding screw used in step 2) (both front and rear).


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5) Fit the mirror positioning tool between the No. 1 mirror mount and the No. 2 mirror mount (both front and rear); then, insert the tool pin into the mirror positioning tool and the lens mount rail.

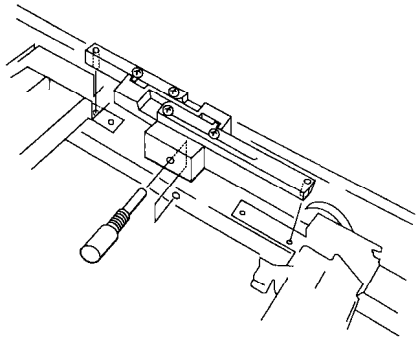

Figure 4-237

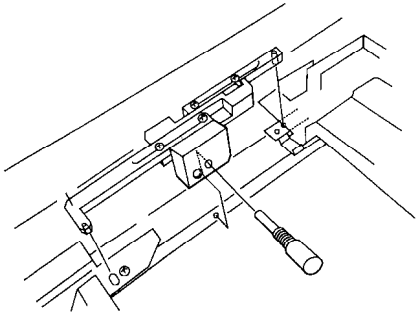

Figure 4-238

6) Attach the scanner cable plate to the No. 1 mirror mount through the angular hole in the side plate using two screws ① (both front and rear).

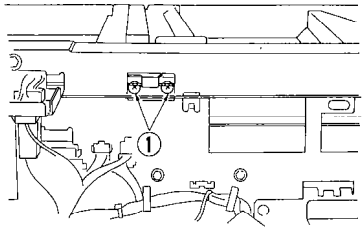


Figure 4-239

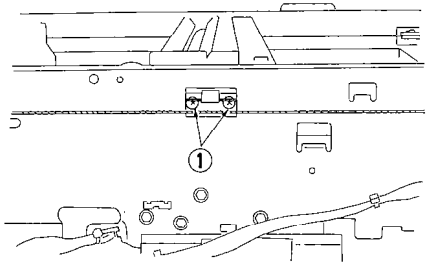


Figure 4-240

**Note:**
If the pin does not come off smoothly after the work, check the gap between the No. 2 mirror mount and mirror positioning tool; then, retighten the No. 1 mirror mount once again.

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## 5. Detaching the Main Motor

1) Detach the rear cover.
2) Disconnect J501 ① and J502 ②.

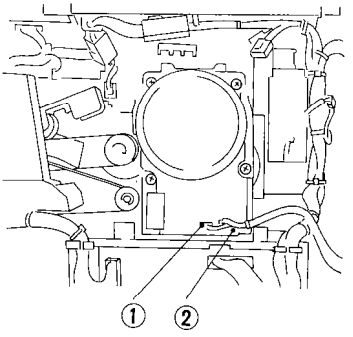


**Figure 4-241**

3) Remove the four screws ③, and detach the main motor ④.

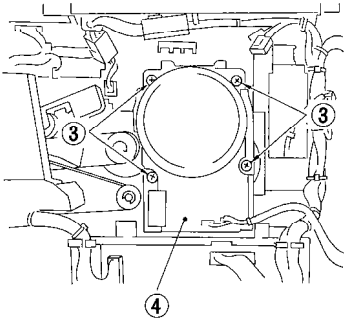


**Figure 4-242**

## 6. Detaching the Registration Clutch

1) Detach the rear cover.
2) Disconnect J30 ①.

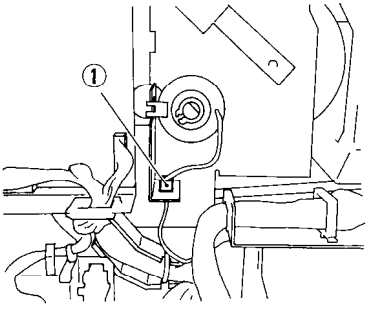


**Figure 4-243**

3) Remove the C-ring ②, and detach the registration clutch ③ from the registration roller shaft.

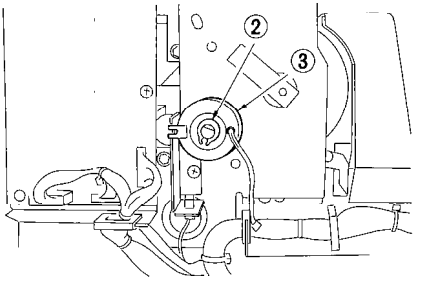


**Figure 4-244**


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## 7. Detaching the Mirror Guide

1) Detach the copyboard glass.
2) Detach the lens hood.
3) Remove the screw, and detach the mirror guide ②.

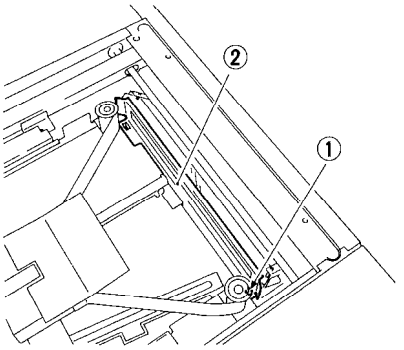


Figure 4-245

## 8. Detaching the Main Drive Assembly

1) Detach the drum kit and the developing assembly.
2) Detach the rear cover.
3) Detach the pick-up assembly.
4) Detach the motor driver PCB.
5) Remove the faston ①.

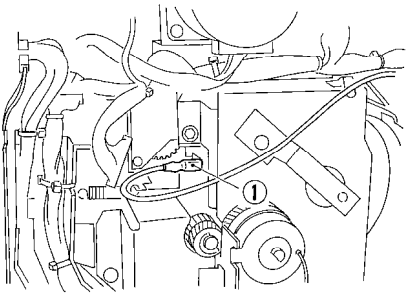


Figure 4-246

6) Remove the two screws ②, and slide the high-voltage terminal ③ up to detach; be sure to release the feeding assembly in advance.

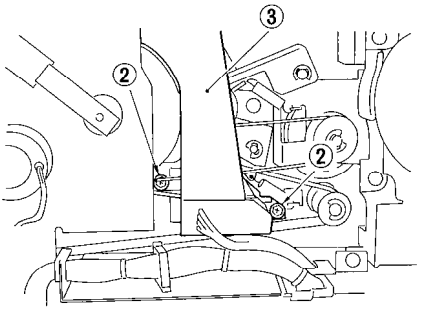


Figure 4-247

7) Detach the registration clutch.

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8) Disconnect the two connectors ④, and detach the harness ⑦ from the edge saddle ⑧.

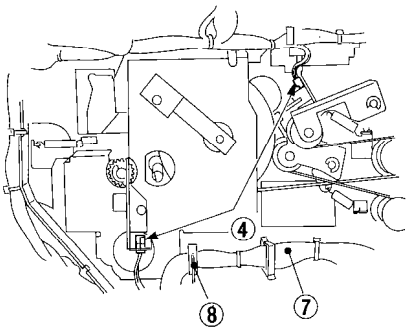


Figure 4-248

9) Remove the five screws ⑤, and detach the timing belt from pulley A and pulley B (Figure 4-250); then, detach the main drive assembly ⑥.

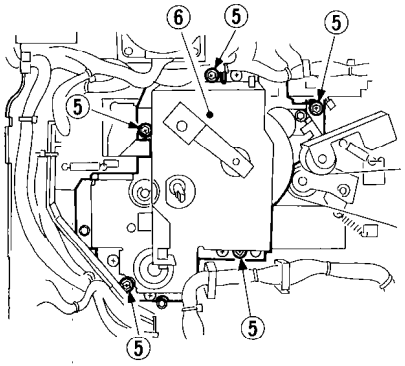


Figure 4-249

## 9. Attaching the Drive Belt

Attach the drive belt routing it over the gear and roller as shown in Figure 4-250.

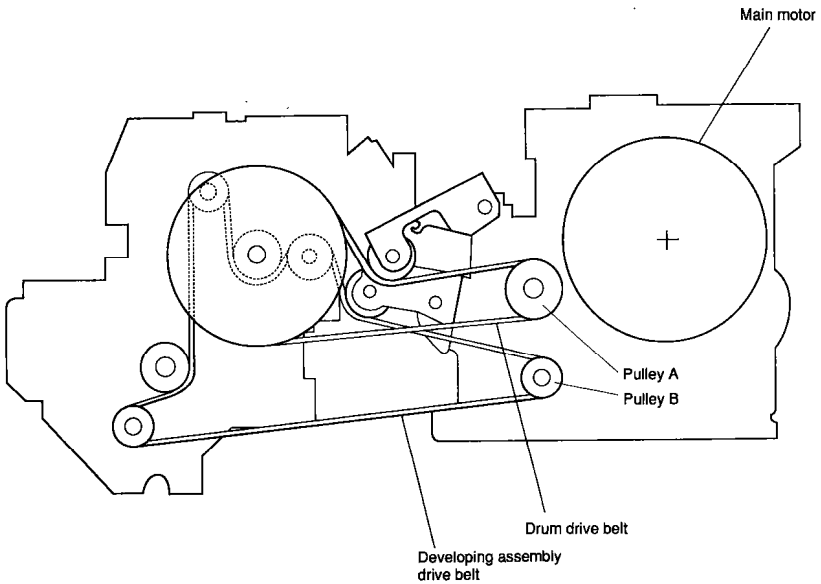


Figure 4-250


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## 10. Detaching the Cleaning Belt Drive Assembly

1) Detach the rear cover.
2) Disconnect J80 ①.

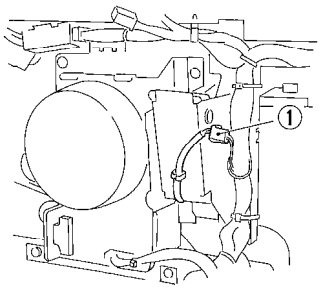


**Figure 4-251**

3) Remove the screw ②, and detach the cleaning belt drive assembly ③.

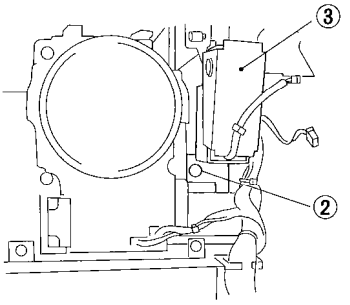


**Figure 4-252**

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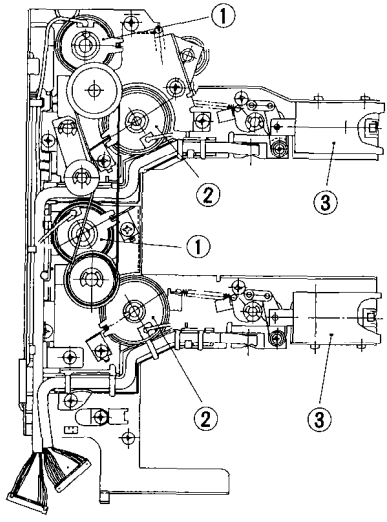
# III. PICK-UP/FEEDING SYSTEM

## A. Pick-Up Assembly

### 1. Construction




① Vertical path roller clutch
② Pick-up roller clutch
③ Pick-up roller release solenoid

**Figure 4-300 (rear view)**

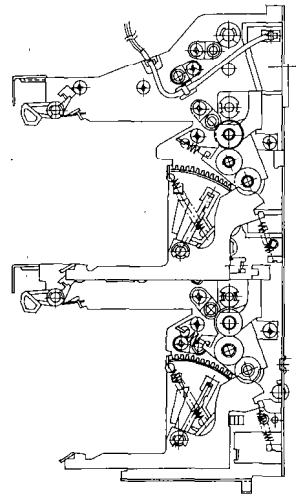
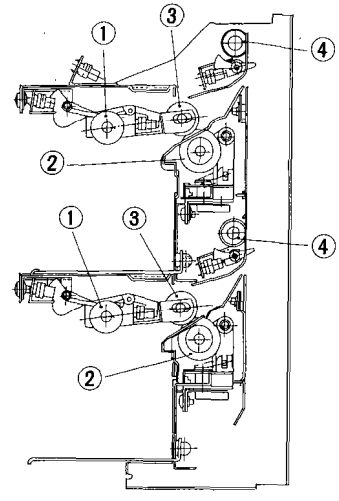


**Figure 4-301 (front view)**




① Pick-up roller
② Separation roller
③ Feeding roller
④ Vertical path roller

**Figure 4-302 (cross section)**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## 2. Detaching the Pick-Up Assembly

1) Detach the cassette from the copier.
2) Detach the multifeeder inside cover and right cover.
3) Detach the front right cover.
4) Disconnect the two connectors ① from the lifter motor.
5) Remove the four screws ②, and detach the cassette lifter motor assembly ③.

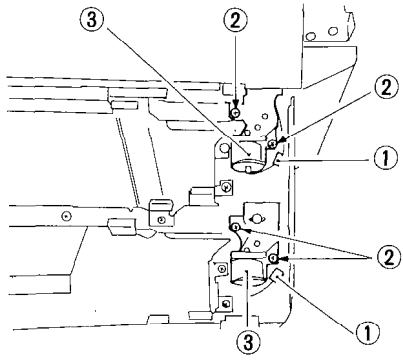


**Figure 4-303**

6) If you are using a cassette feeding unit, open the unit's right door, and remove the screw ④ and the leaf spring ⑤; then, shift the registration guide ⑧ to the outside.

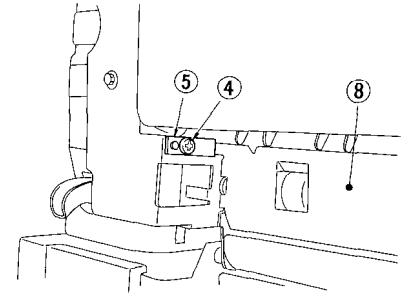


**Figure 4-304**

7) Disconnect the three connectors from the pick-up assembly.
8) Remove the six screws ⑦, and detach the pick-up assembly.

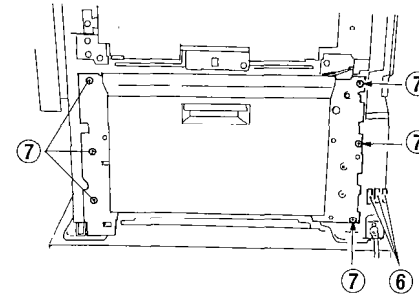


**Figure 4-305**

**Note:**
Be sure to hold the side plate of the pick-up assembly when detaching or attaching the pick-up assembly.

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## 3. Detaching the Pick-Up Roller

1) Detach the pick-up assembly.
2) Remove the stop ring (①; plastic), and pull out the pick-up roller ② together with its collar.

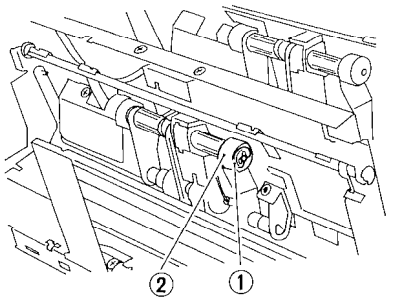


**Figure 4-306**

## 4. Points to Note When Attaching the Pick-Up Roller

a. When attaching the pick-up roller ① to the pick-up assembly, make sure that the round mark ② on its rubber portion is toward the copier's front.

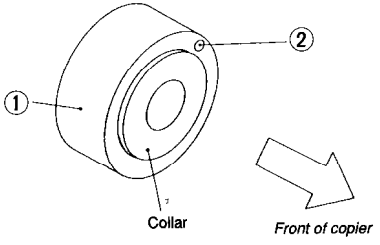


**Figure 4-307**

Different pick-up rollers are used for the front and rear; use a silver-colored roller for the front and brass-colored roller for the rear.

b. Do not detach the rubber portion of the pick-up roller from the collar.

## 5. Detaching the Feeding Roller

1) Detach the pick-up assembly.
2) Remove the screw ①, and detach the pick-up assembly inlet guide ②.

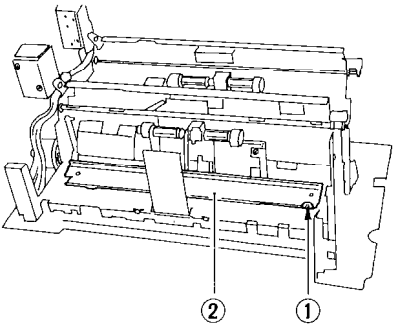


**Figure 4-308**


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3) Remove the stop ring ③, and detach the pick-up roller ④ from the rear.

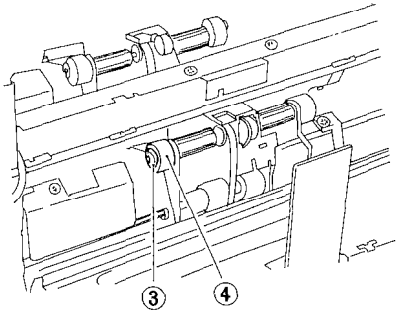


**Figure 4-309**

4) Remove the screw ⑤, and detach the pick-up roller arm bushing ⑥.

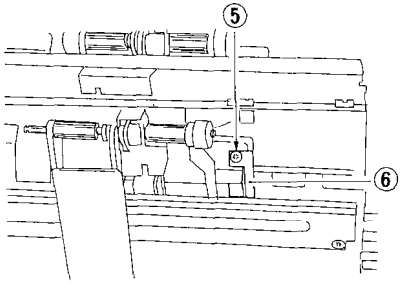


**Figure 4-310**

5) Disconnect the connector ⑦, and remove the stop ring ⑧ from the feeding roller.
6) Detach the pick-up roller arm ⑨ from the plate.

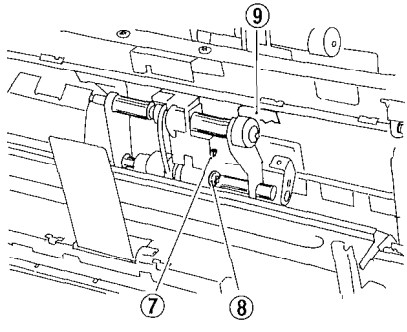


**Figure 4-311**

7) Pull out the pick-up roller unit ⑩ and the feeding roller ⑪ at the same time.

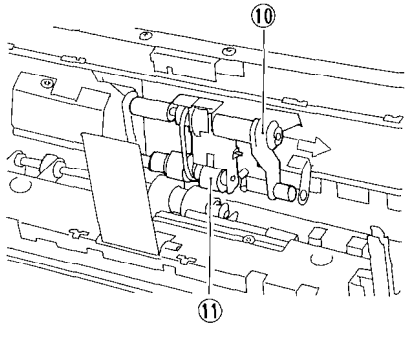


**Figure 4-312**

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**Reference:**

When attaching the feeding roller ⑦ to the pick-up assembly, make sure that the gear ② attached to the feeding roller is to the rear of the copier.

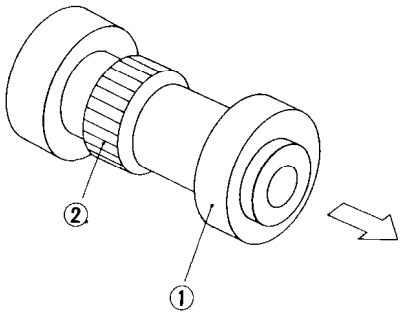


**Figure 4-313**

## 6. Detaching the Separation Roller Assembly

1) Detach the pick-up assembly.
2) Remove the two screws ①, and detach the vertical path guide ②.

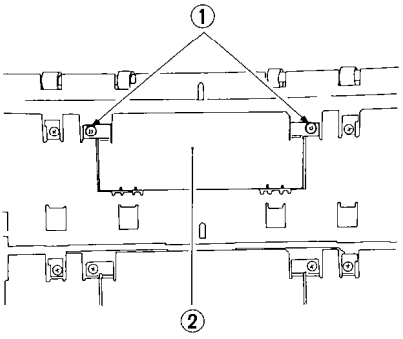


**Figure 4-314**

3) Remove the two screws ③, and detach the pick-up lower guide ④.

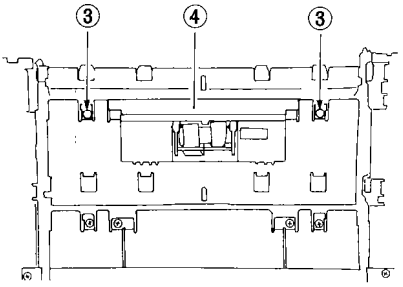


**Figure 4-315**

4) Remove the screw ⑤, and detach the pick-up assembly inlet guide ⑥.

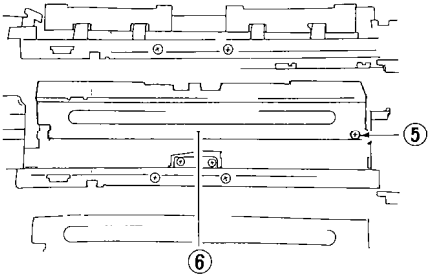


**Figure 4-316**


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5) Remove the spring ⑦ and the two screws ⑧.

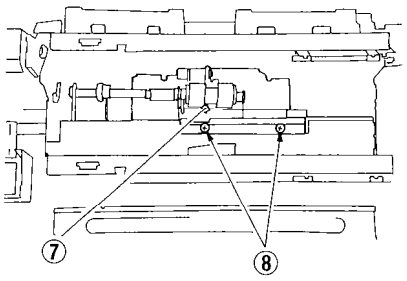


**Figure 4-317**

6) Detach the separation unit ⑨ from the right door side.

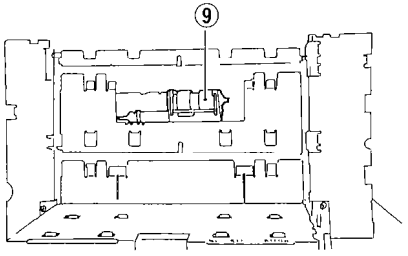


**Figure 4-318**

7) Remove the two stop rings ⑩ from both left and right.
8) Pull out the separation roller shaft ⑪, and detach the separation roller ⑫.

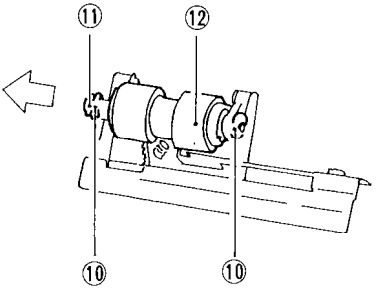


**Figure 4-319**

**Reference:**

When attaching the separation roller ① to the pick-up assembly, be sure that the D-cut is toward the front of the copier as shown in Figure 4-320.

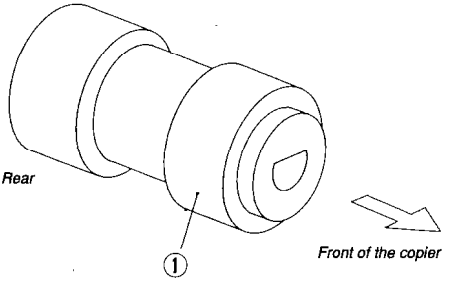


**Figure 4-320**

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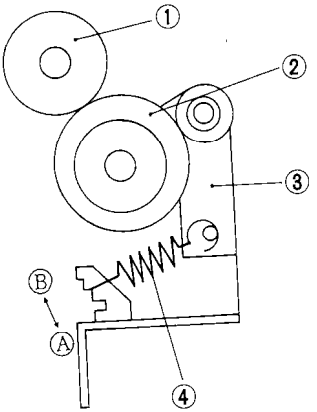
## 7. Adjusting the Pressure of the Separation Roller

When double feeding or pick-up failure occurs at time of pick-up, adjust the position of the pressure roller of the separation roller.

① If double feeding occurs, move the spring in the direction of A.

② If pick-up failure occurs, move the spring in the direction of B.




① Feeding roller
② Separation roller
③ Pressure lever
④ Pressure spring

**Figure 4-321**

## 8. Positioning the Pick-Up Roller Release Solenoid (SL1, SL2; pick-up assembly)

Attach the solenoid so that the pick-up roller arm ① shown in Figure 4-323 butts against the upper stay ② when the plunger of the solenoid is pushed in.

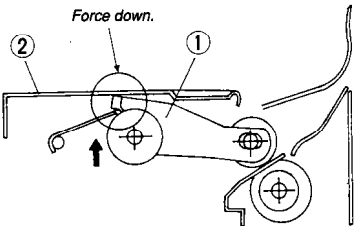



**Figure 4-322**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## 9. Releasing the Lifter

If the lifter is up, push the lifter release arm ① to shift down the lifter.

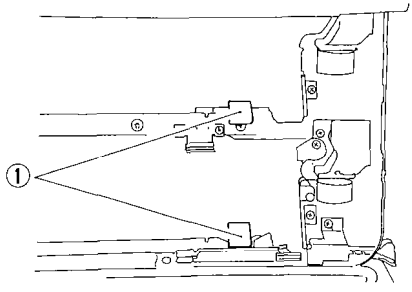


Figure 4-323

## 10. Adjusting the Registration (left/right)

1) Detach the front lower cover.
2) Loosen the screw ① to adjust the position of the cassette hook plate ②; make sure it is 0 ±1.5 mm.

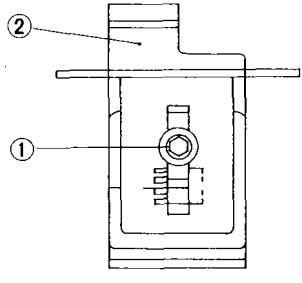


Figure 4-324

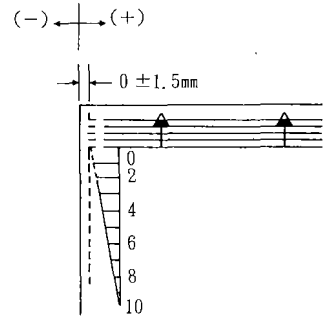


Figure 4-325

3) After adjusting the position, be sure to enter the paper width default setting for the cassette; see the SERVICE HANDBOOK.

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# B. Multifeeder

## 1. Detaching the Multifeeder

1) Detach the right cover and the multifeeder inside cover.
2) Disconnect the connector ①.
3) Remove the four screws ②, and detach the multifeeder ③.

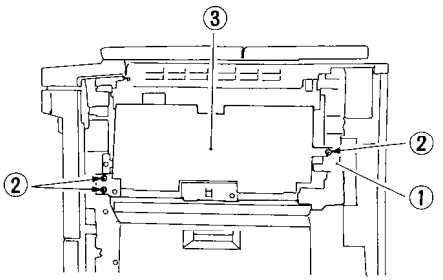


Figure 4-326

## 2. Detaching the Pick-Up Roller and Separation Pad (multifeeder)

1) Detach the multifeeder.
2) Remove the stop ring ①.
3) While pushing down the separation pad ②, detach the pick-up roller ③.

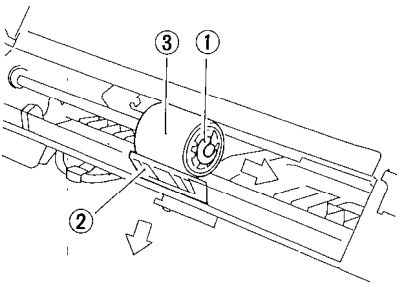


Figure 4-327

4) Lift the multifeeder tray.
5) Remove the screw ④, and detach the separation pad assembly ⑤.

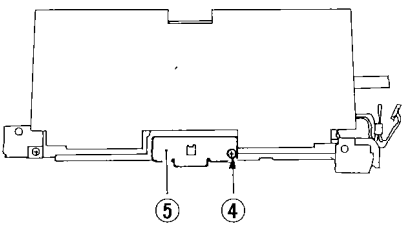


Figure 4-328


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**Reference:**

When attaching the multifeeder pick-up roller ①, orient it so that the cross mark ② on the collar is toward the rear.

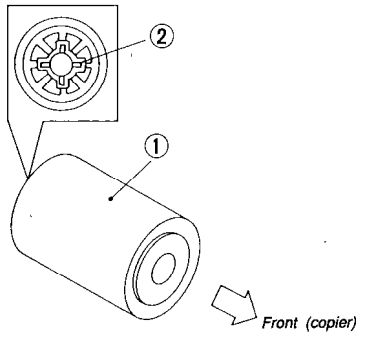


Figure 4-329

## 3. Adjusting the Pressure of the Separation Pad

When double feeding or pick-up failure occurs frequently, adjust the position of the pressure spring of the separation pad.

① if double feeding is frequent, move the spring holder toward B.

② if pick-up failure is frequent, move the spring holder toward A.

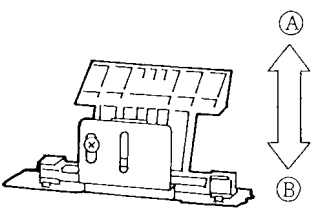


Figure 4-330

## 4. Adjusting the Left/Right Registration

If the left-right registration of the multifeeder is wrong, loosen the screw ① to adjust the position of the tray.

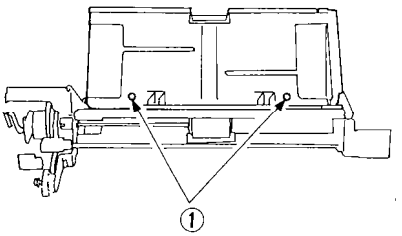


Figure 4-331

## 5. Adjusting the Position of the Paper Guide Cam (multifeeder)

Adjust the engagement of the 26T gear 1 and the 26T gear 2 so that the paper guide and the paper guide cam are as shown in Figure 4-332 when the solenoid plate is in contact with the claw of the control ring.

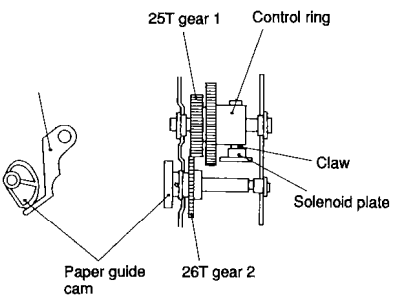


Figure 4-332

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### 6. Attaching the Timing Belt (multifeeder)

Butt the rack plate of the multifeeder against A (open position).

Move the slide control in the direction of B, and attach the timing belt on the pulley.

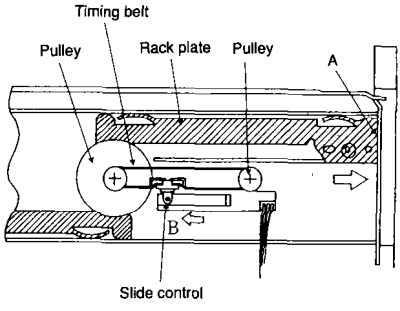


**Figure 4-333**

## C. Registration Roller Assembly

### 1. Detaching the Registration Roller

1) Open the front cover.
2) Release the feeding assembly.
3) Detach the transfer corona assembly.
4) Detach the inside left cover and inside right cover.
5) Detach the developing assembly and drum unit.
6) Detach the rear cover.
7) Detach the registration roller clutch.
8) Detach the main drive assembly.
9) Disconnect the connector ①, and remove the screw ② (varistor).

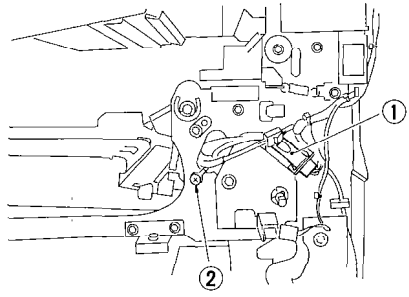


**Figure 4-334**


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10) Remove the bushing ③ (screw), and detach the transfer guide ④.

**Note:**
- During the work, pay attention to the spring at the rear of the feeding assembly.
- If removal is difficult, loosen the bushing ③ at the rear of the copier to facilitate the work.

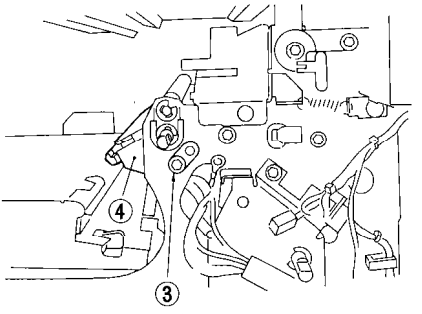


**Figure 4-335**

11) Remove the shaft retaining spring ⑤, two E-rings ⑥, and two bushings ⑦ (front, rear).

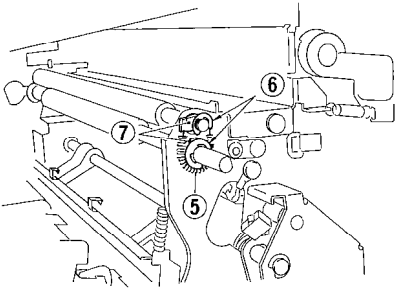


**Figure 4-336**

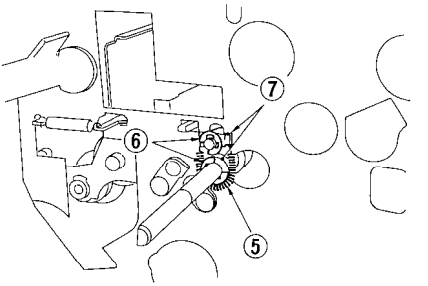


**Figure 4-337**

12) Detach the registration roller ⑧.

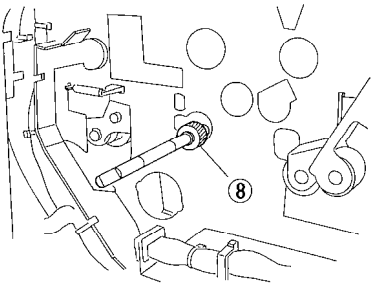


**Figure 4-338**

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# D. Feeding Assembly

## 1. Feeding Assembly

**Note:**
**When detaching the feeding assembly, be sure to detach the drum unit, transfer corona assembly, developing assembly, and fixing assembly first.**

1) Disconnect J67 ①.

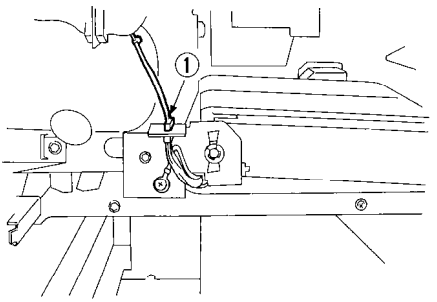


**Figure 4-339**

2) Remove the screw ③, and detach the bushing support ④.

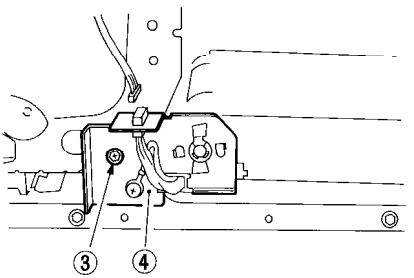


**Figure 4-340**

3) While paying attention to the spring at the rear of the feeding assembly ⑤, pull out the feeding assembly.

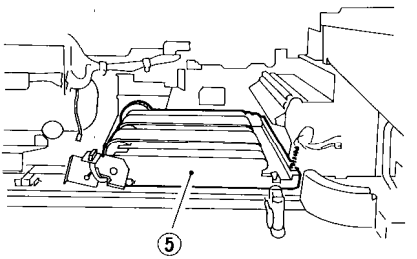


**Figure 4-341**

## 2. Detaching the Feeding Belt

1) Detach the feeding assembly.
2) Remove the three screws ①, and detach the terminal mount ②.

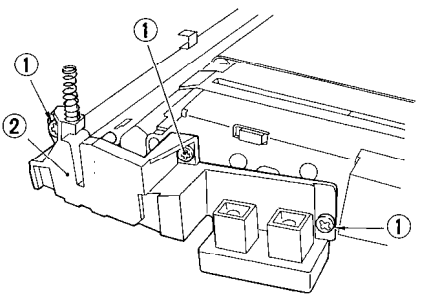


**Figure 4-342**


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3) Remove the three screws ③, and detach the solenoid arm; then, detach the transfer corona rail ④.

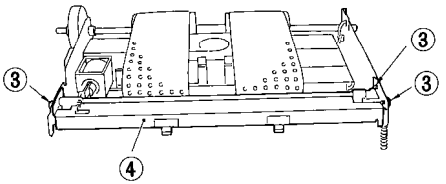


Figure 4-343

4) Remove the two spacers ⑤.

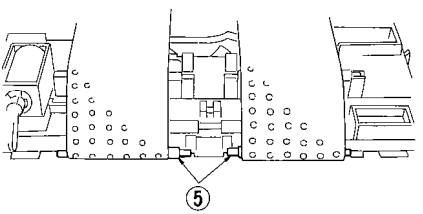


Figure 4-344

5) Detach the feeding belt ⑥.

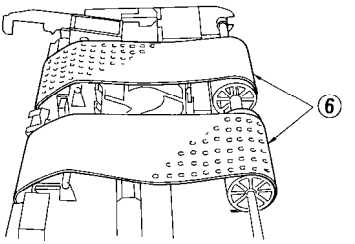


Figure 4-345

### 3. Detaching the Feeding Fan

1) Detach the feeding assembly.
2) Detach the feeding belt.
3) Disconnect J68 ①, and disengage the hook assembly ②; then, detach the feeding fan ③.

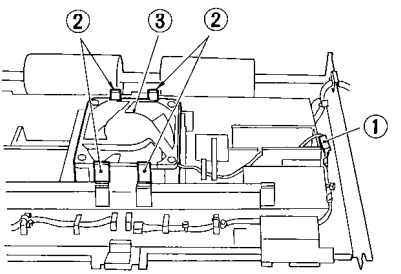


Figure 4-346

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### 4. Adjusting the Position of the Transfer Roller Release Solenoid

Set the spring on the release link (rear); move the solenoid ② into the direction of the arrow Ⓑ, and screw it in position so that ℓ is 6.0 ±0.2 mm when the release link is pulled in the direction of the arrow Ⓐ.

After adjustment, make sure that the solenoid shaft and the release link (front, rear) move smoothly.

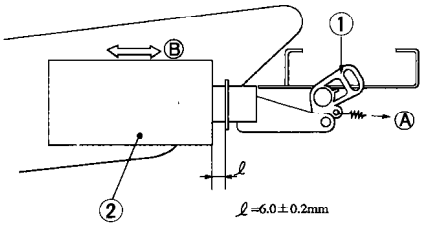


Figure 4-347

## E. Delivery Assembly

### 1. Detaching the Delivery Assembly

1) Open the delivery assembly.
2) Detach the connector cover ①.

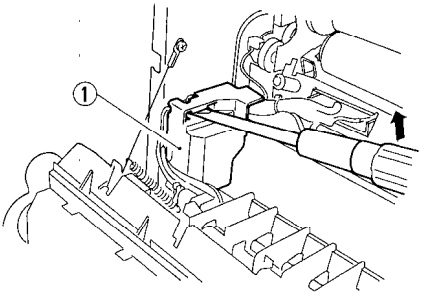


Figure 4-348

3) Disconnect the connector ②, and remove the grounding wire fixing screw ③.
4) Remove the wire fixing screw (④; rear).

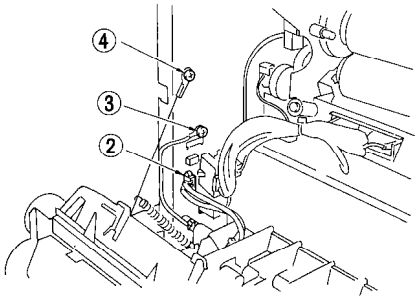


Figure 4-349


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5) Remove the wire fixing screw (⑤; front).
6) Remove the screw ⑦, and detach the support shaft plate ⑥ of the feeding assembly; then, detach the delivery assembly.
Take care not to drop the delivery assembly.

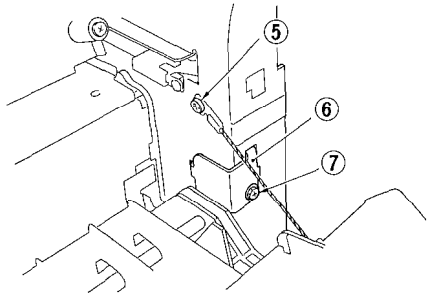


**Figure 4-350**

## 2. Detaching the Upper Separation Claw

1) Open the delivery assembly.
2) Remove the screw ①, and detach the insulating cover ②.

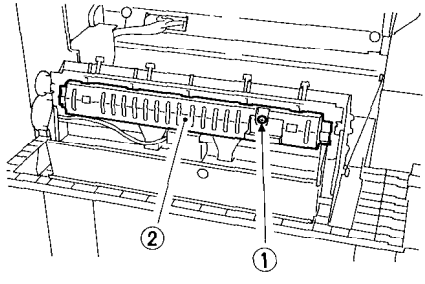


**Figure 4-351**

3) Remove the two screws, and detach the upper separation claw unit ④.

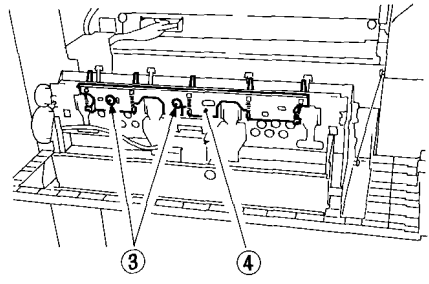


**Figure 4-352**

4) Remove the spring ⑤, and detach the upper separation claw ⑥.

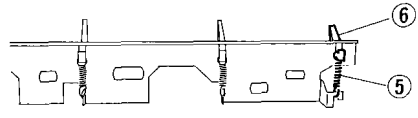


**Figure 4-353**

**Note:**
When attaching the upper separation claw unit, be sure to keep it toward the front.

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## 3. Detaching the Lower Separation Claw

1) Open the delivery assembly.
2) Remove the four springs ① for the lower separation claw.

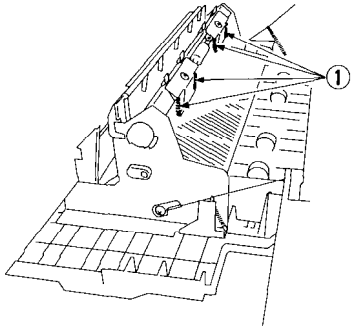


**Figure 4-354**

3) Remove the two screws ②, and detach the lower separation claw support ③.

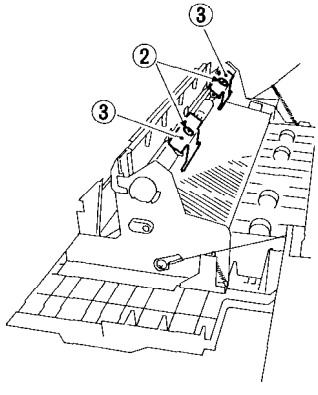


**Figure 4-355**

4) Detach the four separation claws ④.

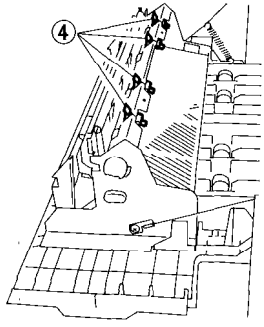


**Figure 4-356**

## 4. Adjusting the Position of the Paper Deflector Drive Solenoid (SL4; delivery assembly)

Make sure that the spacer at the end of the shaft of the paper deflector shown in Figure 4-358 comes into contact with the long hole in the side plate of the delivery assembly.

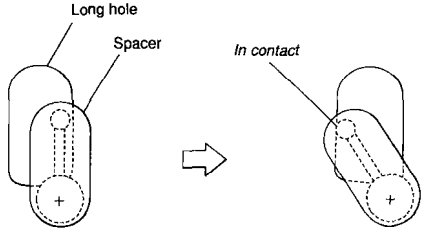


**Figure 4-357**


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# IV. EXPOSURE SYSTEM

## A. Scanner System

### 1. Detaching the Scanning Lamp

1) Disconnect the power plug.
2) Detach the copyboard glass.
3) Remove the screw ①, and detach the reflecting plate ②.

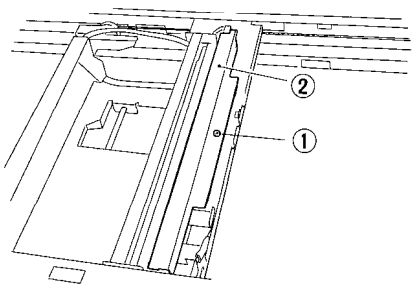


Figure 4-400

4) Turn a flat-bladed screwdriver into the direction of the arrow ① to open the terminal plate in the direction of the arrow ②; then, detach the scanning lamp.

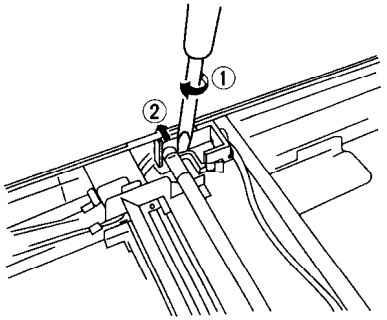


Figure 4-401

**Note:**
1. Do not start the work until the scanning lamp has cooled.
2. Do not leave fingerprints on the scanning lamp.
3. If the surface of the scanning lamp is soiled, dry wipe it.

### 2. Orientation of the Lamp

Orient the boss in the center of the lamp ① in the direction of the arrow, i.e., the direction in which the mirror mount moves in reverse; on the longer side, make sure that the logo is toward the front.

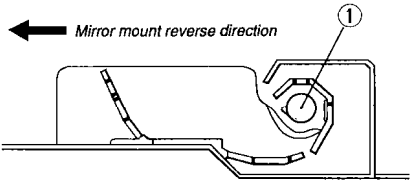


Figure 4-402

**Note:**
When handling the lamp, take care not to touch it.

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## 3. Detaching the Thermal Fuse

1) Detach the copyboard glass.
2) Remove the screw ①, and detach the attraction plate ②.

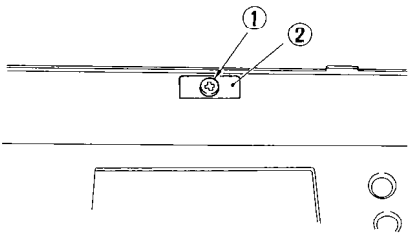


Figure 4-403

3) Hold the No. 1 mirror mount ③ around its center, and move it to the right until it is positioned as shown in Figure 4-404.

**Note:**
**When moving the No. 1 mirror mount, be sure to hold it at its center; do not touch the lamp or reflector.**

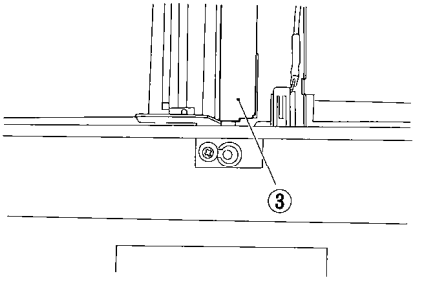


Figure 4-404

4) Remove the two screws ④, and detach the thermal fuse ⑤.

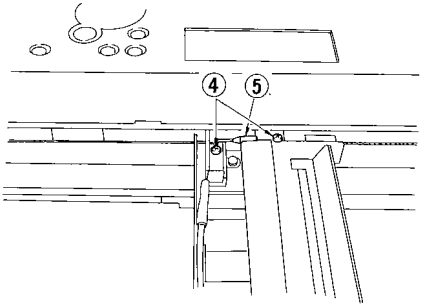


Figure 4-405

## 4. Detaching the Blank Exposure Assembly

1) Open the front door, and detach the inside left cover.
2) Detach the developing assembly and drum unit.
3) Disconnect J91 ① and J95 ②.
4) Remove the two screws ③, and detach the harness retainer.

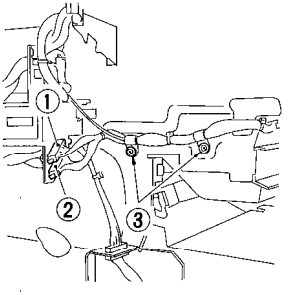


Figure 4-406


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5) Remove the two screws ④.

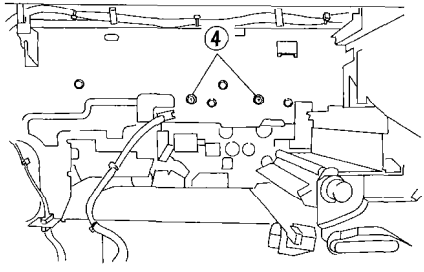


Figure 4-407

6) Pull out the blank exposure assembly ⑤ toward the front slowly.

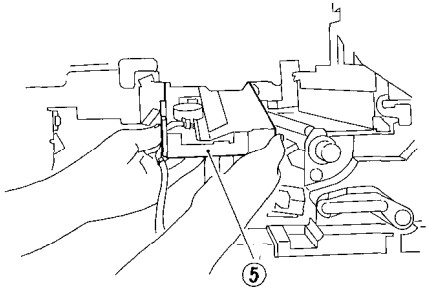


Figure 4-408

## 5. Detaching the Blank Exposure Lamp

1) Detach the blank exposure assembly.
2) Remove the two screws ①, and detach the blank upper plate ②.

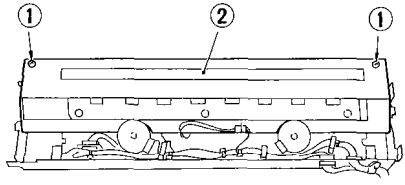


Figure 4-409

3) Disconnect J93 ③ and J94 ④.

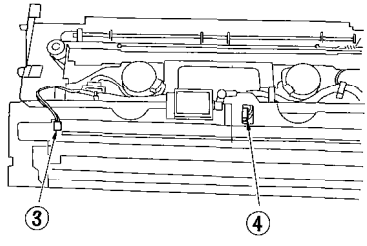


Figure 4-410

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4) Remove the three screws ⑤, and detach the blank exposure lamp ⑥.

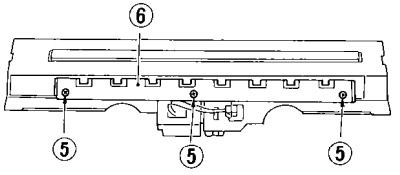


Figure 4-411

## 6. Detaching the Blank Shutter Solenoid

1) Detach the blank exposure assembly.
2) Detach the upper blank plate, and desconnect J93 and J94; see 5. "Detaching the Blank Exposure Lamp."
3) Remove the screw ① and the spring ②; then, detach the link arm ③ from the blank shutter.

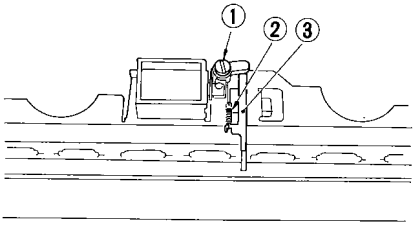


Figure 4-412

4) Remove the three screws ④, and disconnect the connector ⑥; then, pull out the blank shutter solenoid ⑤ upward.

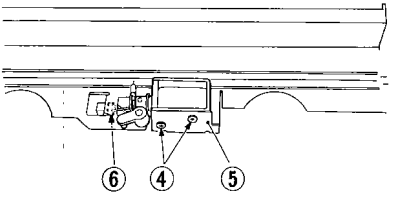


Figure 4-413


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## 7. Adjusting the Position of the Blank Shutter Solenoid

Adjust the position of the solenoid so that the bottom A is 7.7 ± 0.5 mm on both sides when the solenoid is moved to its direction of activation.

After adjustment, make sure that the solenoid moves smoothly.

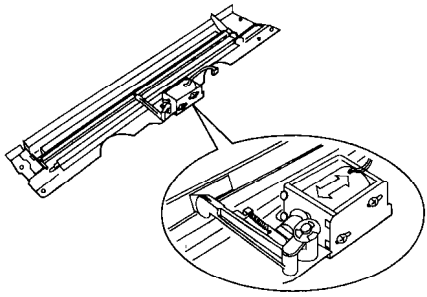

Figure 4-414a

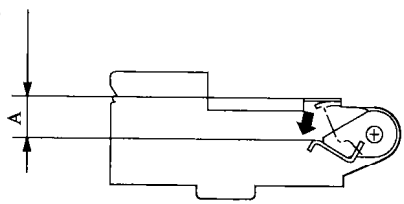


Figure 4-414b

## 8. Detaching the Blank Motor

1) Detach the blank exposure assembly.
2) Detach the blank upper plate, and disconnect J93 and J94; see p. 4-41.
3) Disconnect the J92 ① and J96 ②.

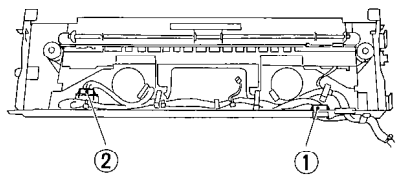


Figure 4-415

4) Remove the four screws ③, and pull out the blank motor ④ upward.

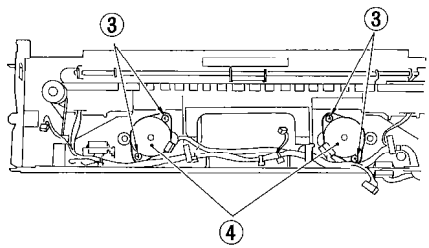


Figure 4-416

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## 9. Attaching the Blank System Cable

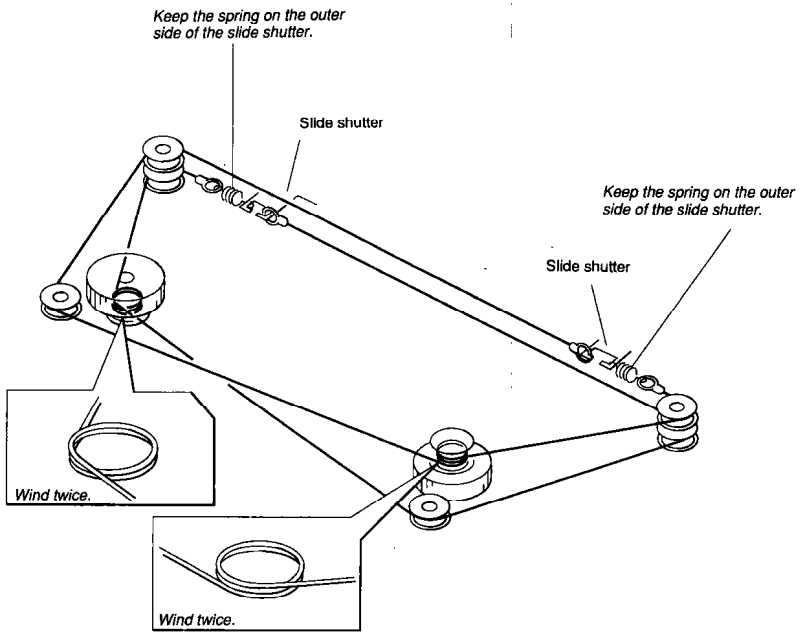
Keep the spring on the outer side of the slide shutter.
Slide shutter
Keep the spring on the outer side of the slide shutter.
Slide shutter
Wind twice.
Wind twice.

**Figure 4-417**


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# V. CORONA SYSTEM

## A. Drum Unit

### 1. Detaching the Drum Unit

1) Open the front door.
2) Turn the developing assembly release lever ① counterclockwise.

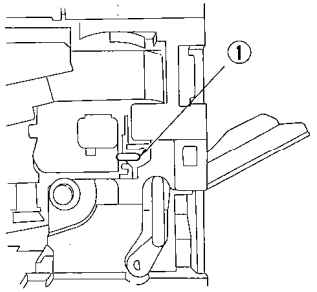


**Figure 4-500**

3) Open the hopper, and release the feeding assembly.
4) Detach the knob ②.
5) Slide out the drum unit ③ slowly to the front.

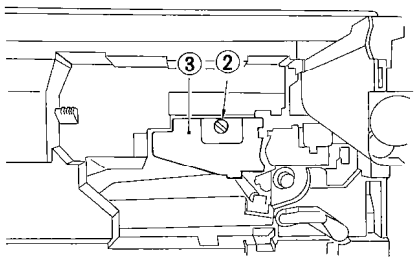


**Figure 4-501**

**Note:**
Take care not to damage the photosensitive drum.

**Note:**
The photosensitive drum is highly susceptible to light; exposure to room light can affect it enough to produce white spots or black lines on the copies.
As a rule, do not switch on the copier with the drum unit detached; otherwise, the registration roller and transfer guide interfere with each other and, if the registration roller rotates during WMUPR, it can damage the registration roller.

### 2. Cleaning

If the surface of the photosensitive drum is soiled, wipe it using a flannel cloth coated with toner; do not use paper, lint-free or otherwise.

**Note:**
Do not dry wipe the photosensitive drum or use a solvent; do not use cleaning powder.

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# B. Primary Corona Assembly

## 1. Detaching the Primary Corona Assembly

1) Detach the drum unit from the copier.
2) Slide the lock ① on the top of the drum unit into the direction of the arrow.

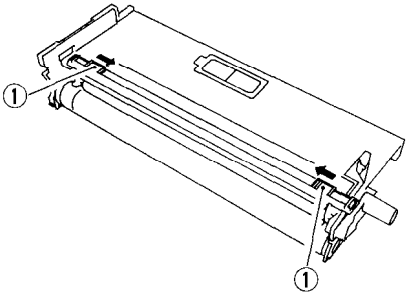


**Figure 4-502**

3) Turn the primary corona assembly ② into he direction of the arrow, and detach it together with the holder.

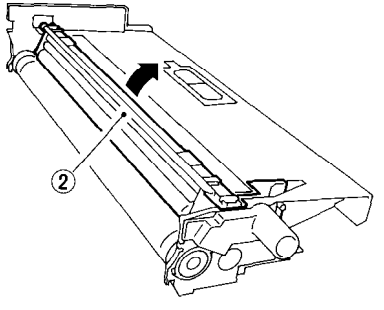


**Figure 4-503**

## 2. Cleaning the Cleaning Pad and the Primary Corona Roller

1) Detach the primary corona assembly.
2) Place the primary corona assembly as shown in Figure 4-504, and clean the cleaning pad ③ using a cotton wad ④ or folded lint-free paper.

**Note:**
- As a rule, dry wipe the parts; do not use water, alcohol, or solvent.
- When dry wiping the part, make sure strokes are in the same direction only.

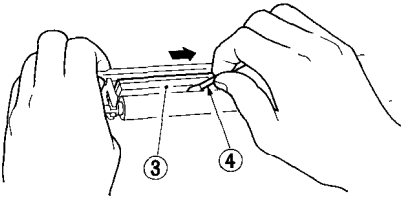


**Figure 4-504**


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3) While rotating the primary charging roller ④, clean it using lint-free paper ⑥.

**Note:**
- As a rule, dry wipe the parts; do not use water, alcohol, or solvent.
- When dry wiping the part, make sure strokes are in the same direction only.

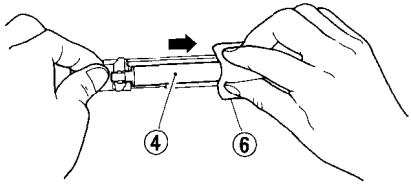


Figure 4-505

## 3. Replacing the Primary Charging Roller and the Cleaning Pad

1) Detach the primary corona assembly.
2) Detach the primary charging roller ④ and the cleaning pad ⑤.

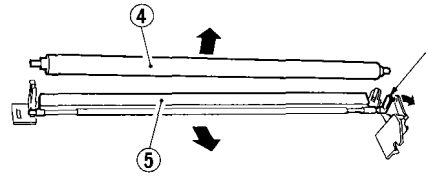


Figure 4-506

3) Attach the new cleaning pad ⑤ to the primary charging roller holder.

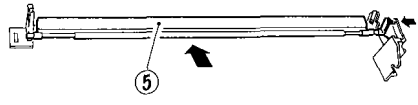


Figure 4-507

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4) Hook the spring on the edge of the cleaning pad; hook the end of the spring on a, pick b with tweezers and turn it in the direction of the arrow to hook it on c.

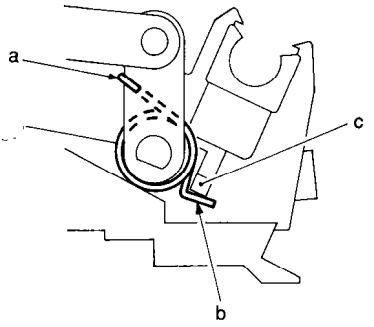


**Figure 4-508**

5) Attach the new charging roller.
6) Attach the primary corona assembly ⑥ to the drum kit.

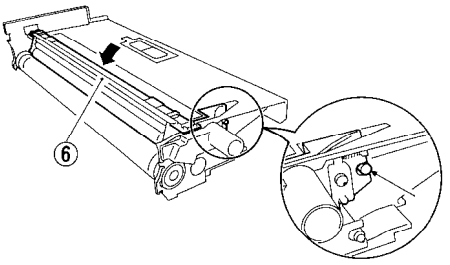


**Figure 4-509**

## C. Transfer Corona Assembly

### 1. Detaching the Transfer Corona Assembly

1) Open the front door.
2) Release the feeding assembly.
3) Remove the screw ①, and detach the corona assembly retainer ②.

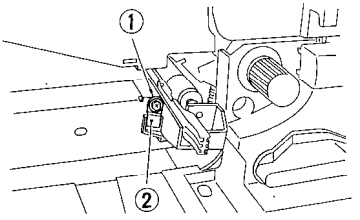


**Figure 4-510**

4) While lifting the transfer roller cover, pull out the transfer corona assembly ③ toward the front.

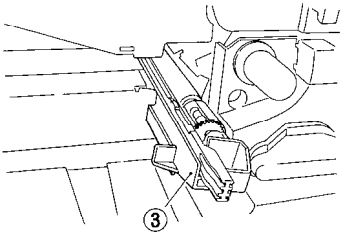


**Figure 4-511**

**Note:**
When detaching and attaching the transfer corona assembly, be sure to lift the roller cover so that the transfer roller and roller cover will not come into contact.


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## 2. Detaching the Transfer Roller

1) Detach the transfer corona assembly.
2) Detach the bushing covers front ① and rear ②.
3) Detach the arms front ③ and rear ④.

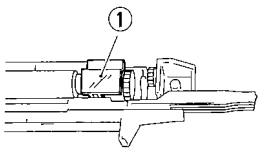


Figure 4-512

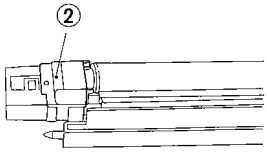


Figure 4-513

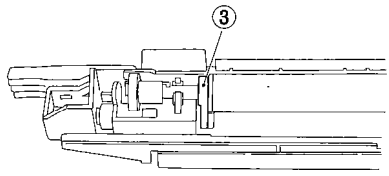


Figure 4-514

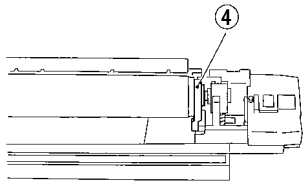


Figure 4-515

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4) Detach the transfer roller ⑤ by moving it upward.

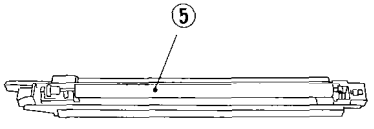


**Figure 4-516**

**Note:**
Do not touch the surface of the roller.
Further, take care not to leave dirt on the roller.


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# VI. DEVELOPING ASSEMBLY

## 1. Detaching the Developing Assembly

1) Open the copier's front cover.
2) Detach the connector cover ①.

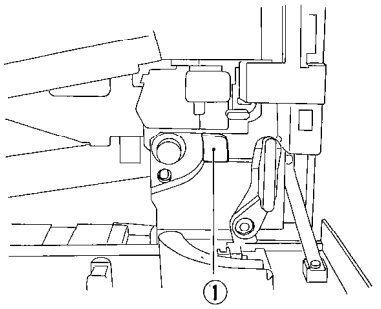


Figure 4-600

3) Disconnect J34 ②.
4) Turn the pressure lever ③ counterclockwise to release it.
5) Pull the developing assembly ⑤ slowly toward the front.

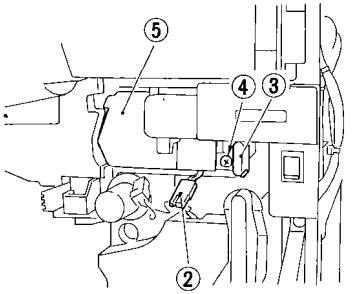


Figure 4-601

## 2. Detaching the Blade

1) Detach the developing assembly from the copier.
2) Remove the two screw ①, and detach the developing cover ②.

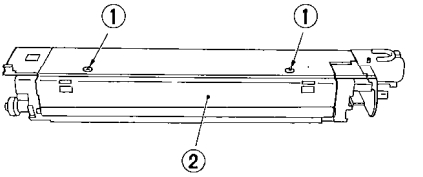


Figure 4-602

3) Place a newspaper on the floor or desk, and empty the developing assembly of toner.
4) Remove the two screws ③, and detach the blade ④ together with its mount.

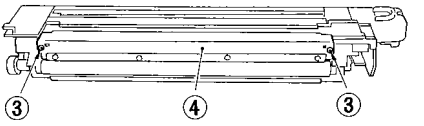


Figure 4-603

**Note:**
Do not detach the blade on its own in the field; it will have to be attached with very high precision. Instead, detach it only together with its mount.

### 3. Detaching the Developing Cylinder and the Magnetic Seal

1) Detach the developing assembly from the copier.
2) Detach the blade.

**Note:**
Do not detach the blade on its own in the field; it will have to be attached with very high precision. Instead, detach it only together with its mount.

3) Remove the screw ①, and detach the front cover ②.

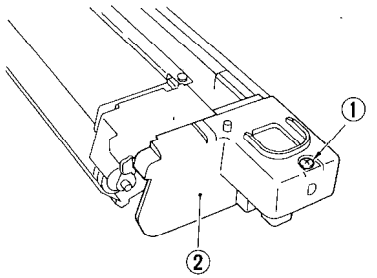


**Figure 4-604**

4) Remove the screw ③, and detach the polarity positioning plate.

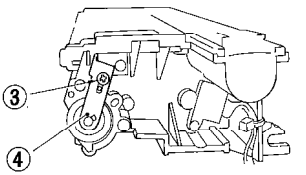


**Figure 4-605**

5) Remove the C-ring and two screws; then, detach the butting spacer ⑤ and the spacer case ⑥.

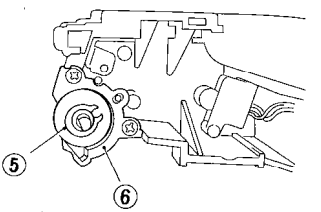


**Figure 4-606**


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6) Remove the two screws ⑦, and detach the gear mount ⑧.

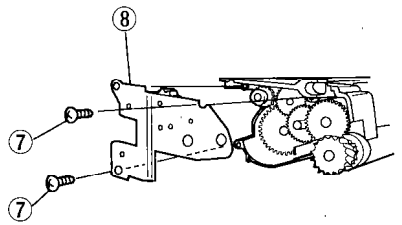


Figure 4-607

7) Remove the two E-rings, and detach the gear ⑨ and the gear ⑩.
Remove the two screws, and detach the butting spacer ⑪ and the spacer case ⑫.

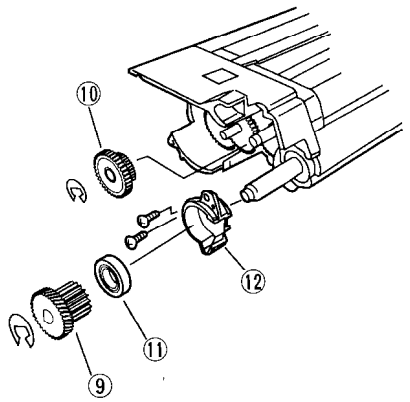


Figure 4-608

8) Detach the developing cylinder ⑬.

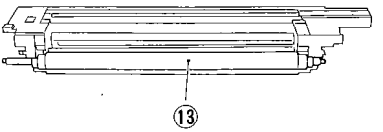


Figure 4-609

9) Detach the magnetic seal ⑭ (both ends).

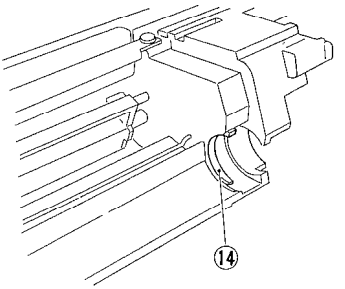


Figure 4-610

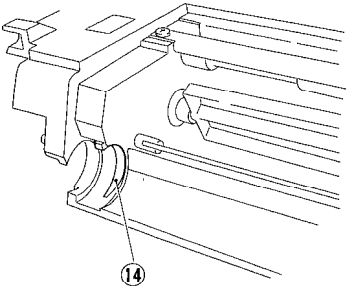


Figure 4-611

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## 4. Attaching the Magnetic Seal and the Blade

1) Clean the area over which the magnetic seal will be attached with alcohol.
2) Attach the magnetic seal as shown in Figure 4-612. Make sure the correct seals are used for the front and the rear; they have different shapes. Further, make sure that the magnetic seal is in firm contact with the container.

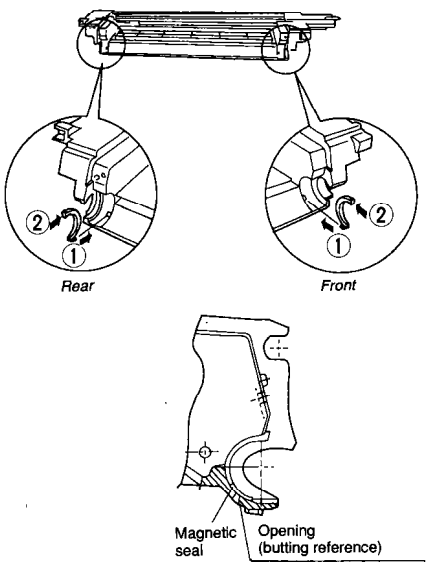


**Figure 4-612**

3) Attach all parts except the blade and developing assembly cover.
4) Push the blade mount against the developing assembly, and fix it in place using two screws. When attaching the blade, place paper ① on the developing cylinder for protection; push A while tightening the screw.

**Reference:**
The distance S—B is 230 ±30mm.

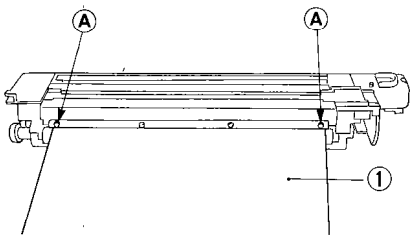


**Figure 4-613**

## 5. Attaching the Polarity Positioning Plate

Attach the polarity positioning plate as shown in Figure 4-614

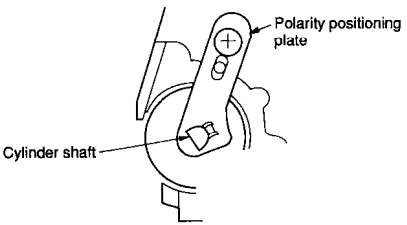


**Figure 4-614**


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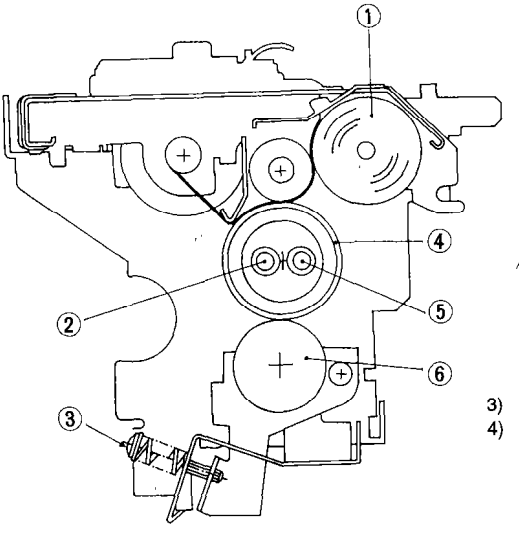
# VII. FIXING SYSTEM

## A. Fixing Assembly

### 1. Construction




① Fixing cleaning assembly
② Sub heater
③ Pressure adjusting screw
④ Upper fixing roller
⑤ Main heater
⑥ Lower fixing roller

**Figure 4-700**

### 2. Detaching the fixing Assembly

1) Open the copier's front cover.
2) Remove the screw, and detach the fixing assembly knob ①.

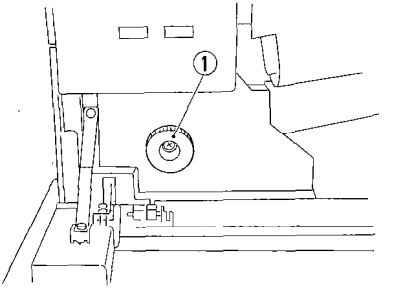



**Figure 4-701**

3) Open the delivery assembly.
4) Detach the connector cover ②; use a flat-blade screwdriver as shown in Figure 4-702.

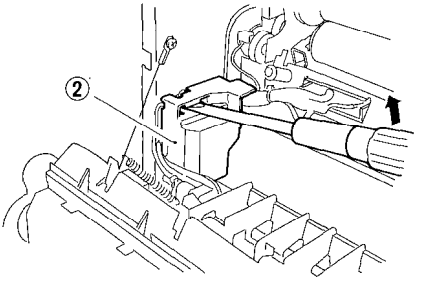



**Figure 4-702**

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5) Disconnect J3 ③, J76 ④, and J77 ⑤.

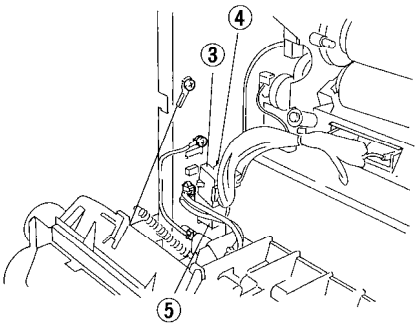


**Figure 4-703**

6) Remove the two screws ⑥, and detach the fixing assembly ⑦ in the direction of delivery. At the time, take care not to damage the delivery separation claw.

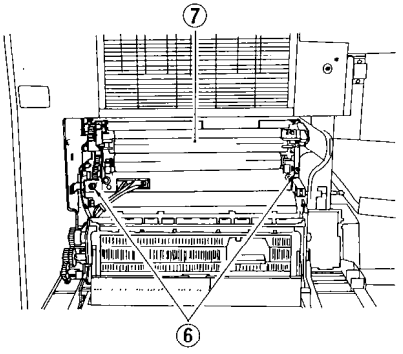


**Figure 4-704**

## 3. Detaching the Fixing Cleaning Belt

1) Detach the fixing assembly from the copier.
2) Remove the two screws ①, detach the fixing cleaner assembly ②.

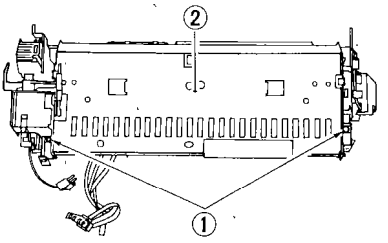


**Figure 4-705**

3) Insert a flat-blade screwdriver ③ into the stop plate ④, and release the pressure on the fixing cleaning belt.

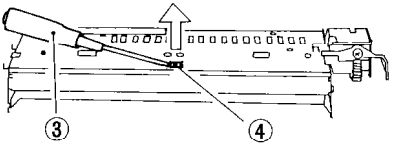


**Figure 4-706**


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4) Turn the cleaning belt set shaft ⑤ of the fixing cleaner assembly clockwise, and detach the fixing cleaning belt ⑥.

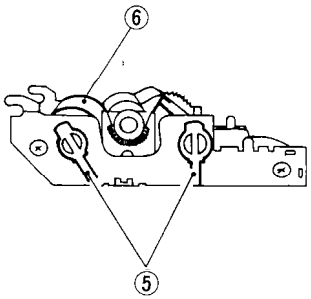


Figure 4-707

## 4. Attaching the Fixing Cleaning Belt

The feed shaft, take-up shaft, and cleaning belt are constructed as a single entity.

To attach the fixing cleaning belt, go through the foregoing steps but in reverse order.

- Wind the cleaning belt around the take-up shaft two to three times. Make sure that the area it comes into contact with the roller is impregnated with oil.

**Note:**
Check that the fixing cleaning belt is not askew and is free of slack and wrinkling.

- After attaching the cleaning belt, insert a flat-blade screwdriver into the fixing assembly drive shaft, and turn it counterclockwise until the belt is taut.

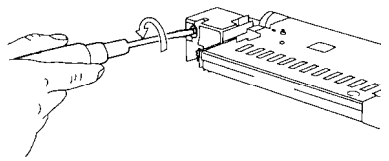

Figure 4-708

**Reference:**

The fixing cleaner assembly is located above the fixing assembly, and cleans the upper roller by bringing a belt impregnated with silicone oil into contact.

The cleaning belt is 15 m in length; a red band is printed on the belt 2.5 m from its end.

**Note:**
Be sure to clear the setting of 'WEB' in counter mode (service mode) whenever you have replaced the fixing cleaning belt.

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## 5. Detaching the Fixing heater

1) Detach the fixing assembly from the copier.
2) Remove the two screws ①, and detach the fixing cleaning assembly ②.

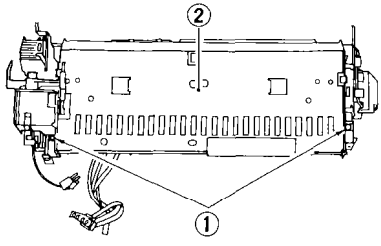


**Figure 4-709**

3) Detach the cord cover ③ from the thermoswitch assembly.

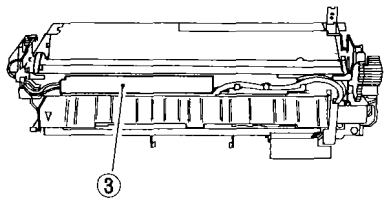


**Figure 4-710**

4) Pull out the two fastons ④ for the heater; they are found on the left when you face the thermoswitch.

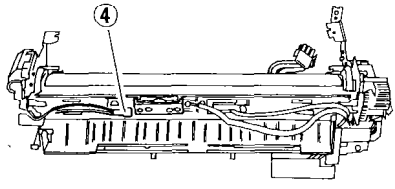


**Figure 4-711**

5) Turn over the fixing assembly, and detach the cord cover ⑤ from the bottom of the fixing assembly.

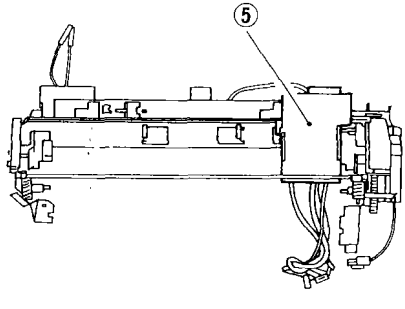


**Figure 4-712**


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6) Pull out the faston ⑥ from the bottom of the fixing assembly.
7) Remove the screw ⑦, and detach the round terminal ⑧.

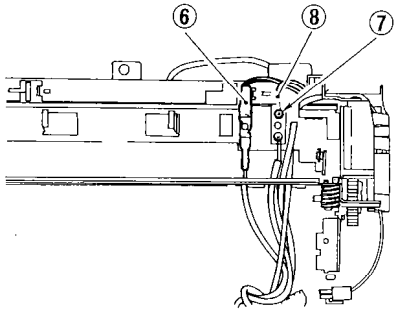


**Figure 4-713**

8) Remove the screw ⑨, and detach the two cord covers ⑩.

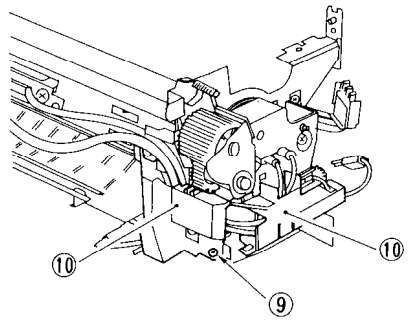


**Figure 4-714**

9) Remove the screw, and detach the front cord cover ⑫.

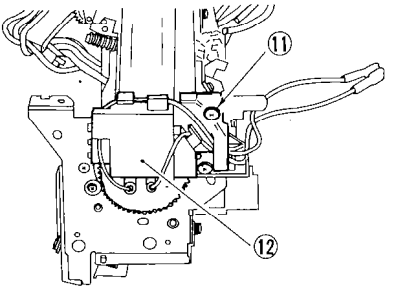


**Figure 4-715**

10) Remove the screw ⑬, and detach the heater mount ⑭ (front).

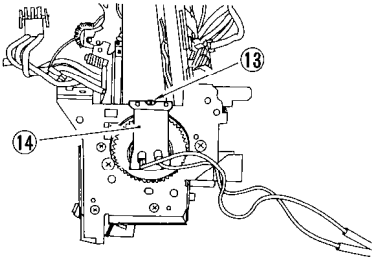


**Figure 4-716**

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11) Remove the three screws ⑮, and detach the metal plate ⑰ and heater mount ⑯ (rear).

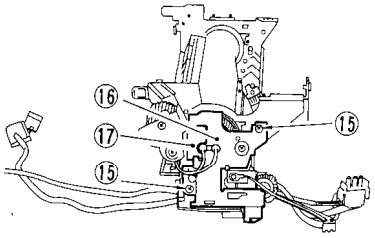


**Figure 4-717**

12) Pull out the two fixing heaters ⑰ slowly toward the front.

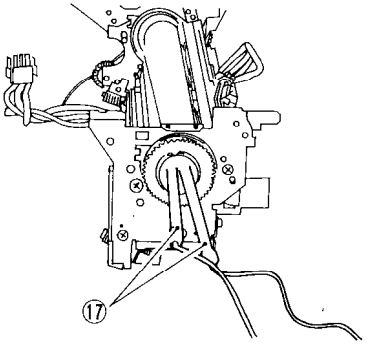


**Figure 4-718**

## 6. Detaching the Fixing Roller

1) Detach the fixing assembly from the copier.
2) Detach the fixing cleaner assembly.
3) Detach the fixing heater.
4) Remove the screw ①, and detach the thermistor mount ②.
5) Remove the two screws, and detach the thermoswitch mount ④.
6) Detach the paper guide ⑤ from the fixing assembly.

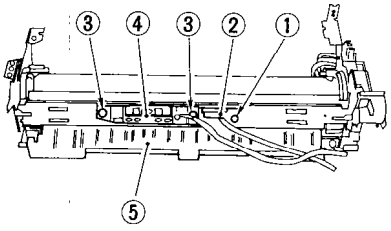


**Figure 4-719**

7) Remove the C-ring ⑥ at the front, and detach the gear ⑦.

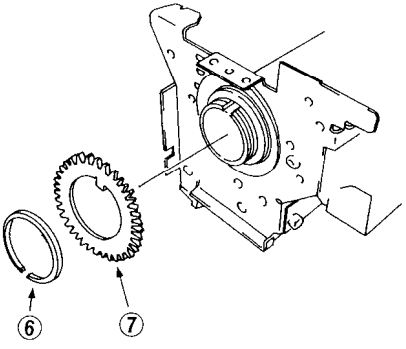


**Figure 4-720**


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8) Remove the C-ring at the rear and the bias ring ⑨; then, detach the gear ⑩.

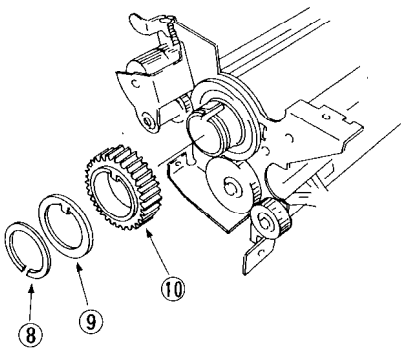


Figure 4-721

9) Remove the two screws ⑫ attached to the lower stay ⑪; fit the screws into the screw holes ⑬ (both sides), and release the pressure of the lower roller.

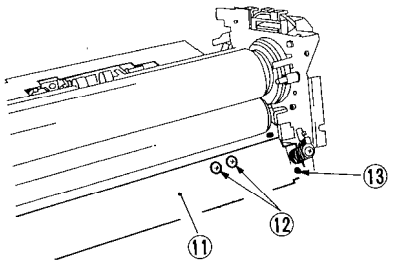


Figure 4-722

10) Remove the screw ⑭.
11) Detach the bearing ⑮ and insulating bush ⑯.

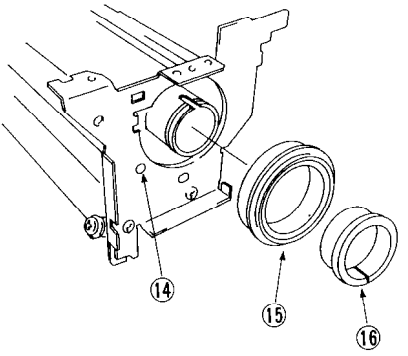


Figure 4-723

12) Pull out the upper fixing roller ⑰ to the front.

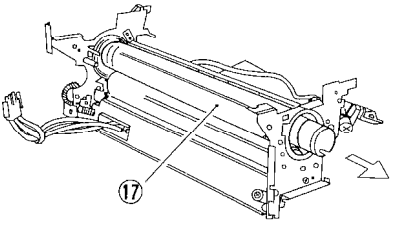


Figure 4-724

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13) Lift the lower fixing roller ⑱ up together with the bearing.

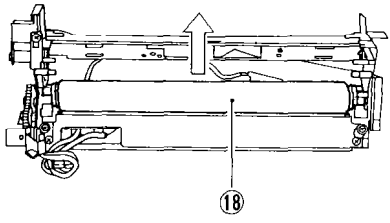


Figure 4-725

## 7. Attaching the Upper Fixing Roller and the Heater

### a. Points to Note When Attaching the Upper Fixing Roller

① If possible, wrap the roller in copy paper to protect its surface from dirt and scratches.

② Attach the insulating bush while orienting it as shown in Figure 4-726.

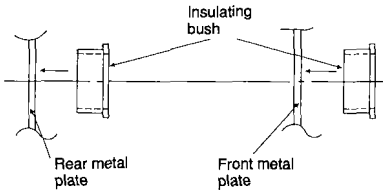


Figure 4-726

③ Attach the upper fixing roller so that the longer of its bushing Ⓐ is toward the rear.

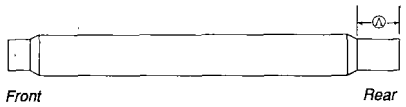


Figure 4-727

### b. Points to Note When Attaching the Heater

① Do not touch the surface of the heater.

② The sub heater is identified one of its terminals; one of its terminals is a round terminal ②. Both ends of the main heater are fastons.

**Main Heater**

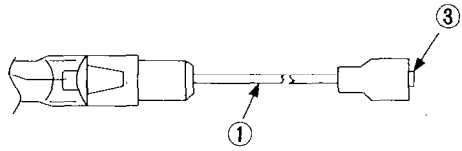


Figure 4-728

**Note:**
The side with the longer lead wire 1 is to the front of the copier.

**Sub Heater**

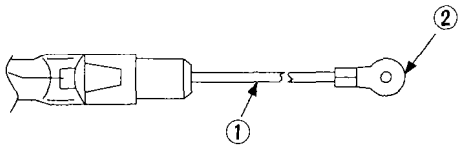


Figure 4-729

**Note:**
The round terminal should face the rear of the copier; the faston, front.


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③ Attach the main heater of the right (pick-up) side, and the sub heater to the left (delivery) side; all viewed from the front of the fixing assembly.

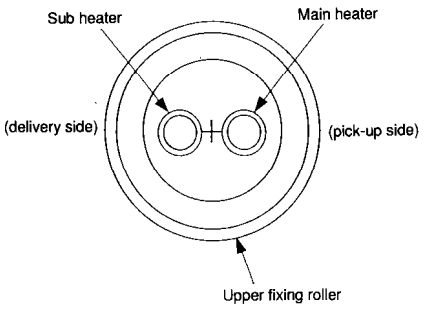


Figure 4-730

## 8. Adjusting the Nip (tightening the pressure adjusting nut)

The nip width should be as indicated in Table 4-1; if it is not as specified, turn the bolt to adjust.

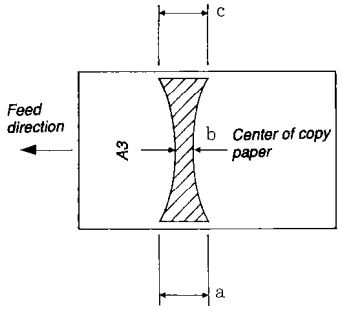


Figure 4-731

**Note:**
a and c represent points 10 mm from both ends of copy paper.

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| Notation | Taken when upper/lower roller is sufficiently heated. | |
|---|---|---|
| b | 64g paper | 6.5 ± 0.5 mm |
| | 80g paper | 6.0 ± 0.5 mm |
| | tracing paper | 5.5 ± 0.5 mm |
| \|a-c\| | 0.5 mm or less | |

**Table 4-1**

**a. Measuring the Nip**

Wait for 15 minutes after the copier has completed its warm-up period; then, make 20 A4 copies before taking measurements:

1) Set A4 or A3 copy paper in the multifeeder.
2) Open the copyboard cover.
3) Enter service mode (✳ 4 ✳), and select 'NIP' using the △ or ▽ key.
4) Press the OK key and then the COPY START key to start copying operation.
   The multifeeder picks up the paper, and a copy is discharged; Figure 4-731.

**Reference:**

The paper stops halfway through the fixing rollers; it is then discharged fully about 10 seconds later.

5) Measure the nip.

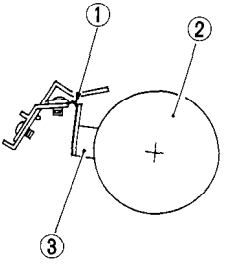
## 9. Attaching the Thermistor

Make sure that the detection face of the thermistor is in even contact with the upper fixing roller.

Further, make sure that the lead wire from the thermistor is not excessively taut.

**Reference:**

You need not adjust the position of the thermistor; if the contact is not even, check to see if the thermistor spring is deformed.




① Thermistor spring
② Upper fixing roller
③ Thermistor

**Figure 4-732**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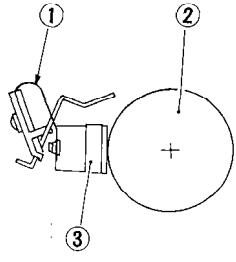
## 10. Attaching the Thermoswitch

Make sure that the detection surface of the thermoswitch is in even contact with the upper fixing roller.

**Reference:**

You need not adjust the position of the thermoswitch; if the contact is not even, check to see if the thermoswitch is not deformed.




① Thermoswitch spring ③ Thermoswitch
② Upper fixing roller

**Figure 4-733**

## 11. Position of the Paper Guide

The position of the paper guide is determined by the position of the paper guide mount. For this reason, you need not adjust the position of the paper guide.

**Note:**
If you have detached the paper guide mount, you will have to adjust the position of the paper guide; do not loosen the screw on the paper guide. If you have loosened it, refer to the scale on the fixing assembly.

## 12. Adjusting the Position of the Cleaning Belt Drive Solenoid

Attach the solenoid so that the solenoid arm ② butts against ⓐ when the plunger ① of the cleaning belt drive solenoid is pushed by a finger.

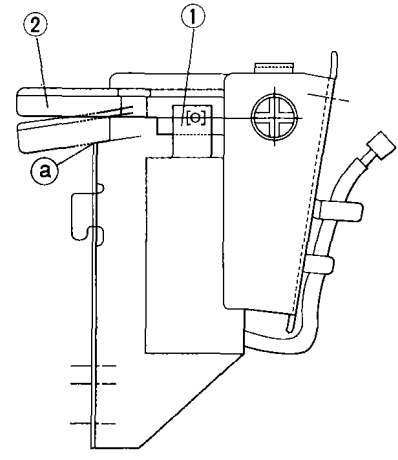



**Figure 4-734**

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# VIII. ELECTRICAL

## A. Detaching the DC Controller PCB

### 1. Detaching the DC Controller PCB

1) Disconnect the connector from the DC controller PCB.
2) Remove the two screws, and detach the DC controller PCB together with its mount.

**Note:**
The DC controller PCB has a built-in battery (BAT101), and shorting across the terminals of the battery can cause overheating; take full note of the following:

### 2. Points to Note When Replacing the DC Controller PCB

- When sending the DC controller PCB to the workshop or factory, keep the PCB intact with its mount and in a conducting bag. Make sure that one side of the conducting bag is transparent so that the face of the PCB shows through the bag.
- You must always make adjustments in service mode or enter necessary settings in service mode or user mode.
- The settings to be entered in service mode are recorded on the Service Label found on both sides of the front door and the Drum Label on the drum.

## B. Composite Power Supply PCB

### 1. Detaching the Composite Power Supply PCB

1) Detach the DC controller PCB; see A. "Detaching the DC Controller PCB."
2) Disconnect all connectors from the composite power supply PCB.
3) Remove the two screws, and pull out the composite power supply PCB to the front together with its mount.

**Note:**
When pulling out the mount, take care so that it will not become trapped by the main motor drive belt. Further, do not hold the heat radiating plate.

### 2. Points to Note When Handling the Composite Power Supply PCB and the Power Supply PCB for Options

- After replacing the composite power supply PCB, be sure to enter the settings on the label attached to the composite power supply PCB in service mode (Service Mode ✳ 3 ✳); 'PWR_OFST' and 'ATVC_STD'.
- Some capacitors on the PCB at times retain charges when the copier is switched off. For this reason, it is important that you never short across the terminals of capacitors after detaching the


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# IX. THREE-CASSETTE FEEDING UNIT

## A. Detaching the Three-Cassette Feeding Unit from the Copier

1) Disconnect the copier's power plug.
2) Disconnect the cassette feeding unit's connector ① from the copier.

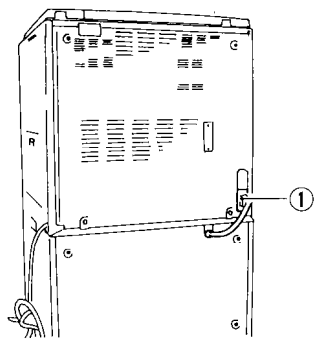


Figure 4-900

3) Open the cassette feeding unit's right door.
4) Remove the two screws ②, and detach the leaf spring ③.

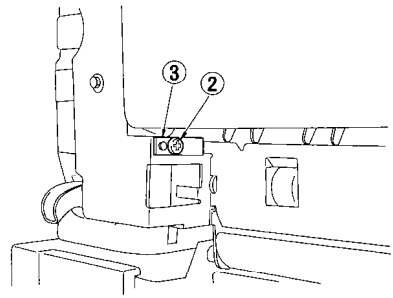


Figure 4-901

5) Hold the copier's four grips, and detach the copier from the cassette feeding unit.

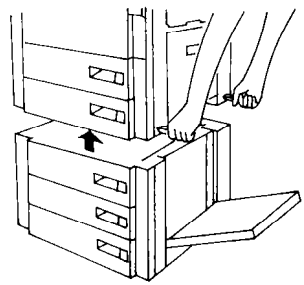

Figure 4-902

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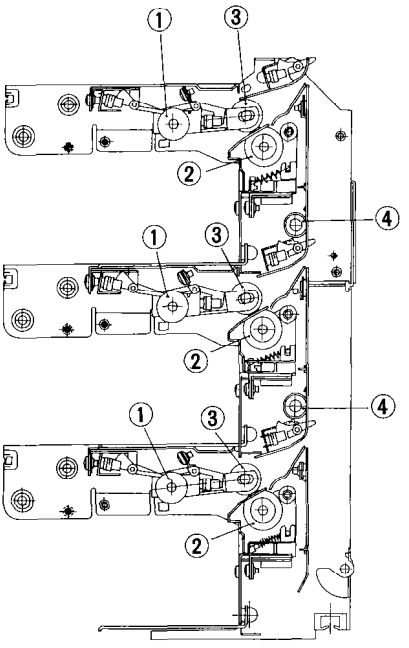
# B. Pick-Up Assembly

## 1. Construction




① Pick-up roller
② Separation roller
③ Feeding roller
④ Vertical path roller

**Figure 4-903 (cross section)**

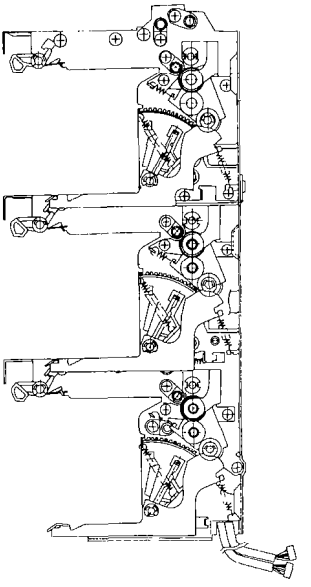


**Figure 4-904 (front view)**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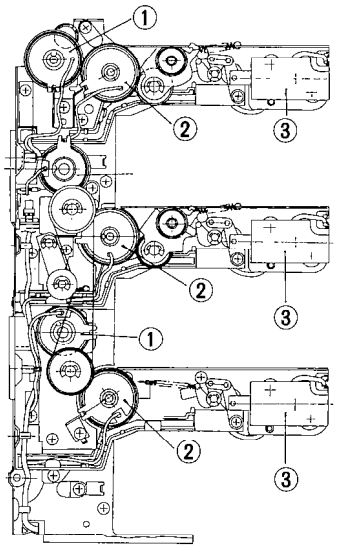


① Vertical path roller clutch
② Pick-up roller clutch
③ Pick-up roller release solenoid

**Figure 4-905 (rear view)**

## 2. Detaching the Pick-Up Assembly

1) Slide out the cassettes from the cassette feeding unit.

**Note:**
Do not try to detach the pick-up assembly while a cassette is inside; otherwise, the lifter would become trapped, preventing the detachment of both cassette and pick-up assembly.

2) Detach the lower right cover.
3) Shift the lifter release arm ① in the direction of the arrow to lower the lifter.

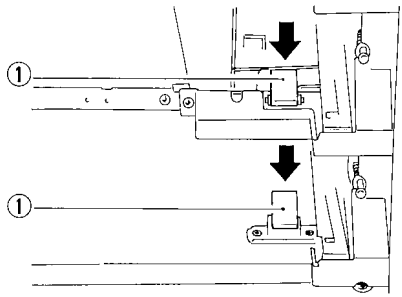


**Figure 4-906**

4) Detach the front left cover and front right cover.
5) Detach the front center cover and right cover.

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6) Disconnect the five connectors ② of the lifter motor.
7) Remove the six screws ③, and detach the cassette lifter motor assembly ④.

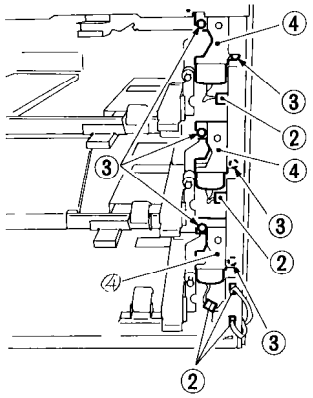


**Figure 4-907**

8) Remove the two screws ⑤, and detach the leaf spring ⑥.

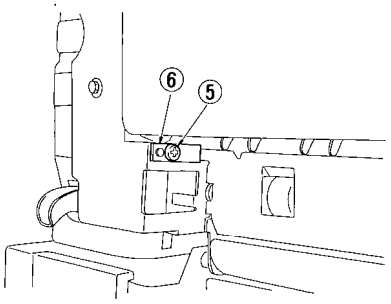


**Figure 4-908**

9) Disconnect the six connectors ⑦.
10) Remove the eleven screws ⑧, and detach the pick-up assembly reinforcement plate ⑨ and pick-up assembly.

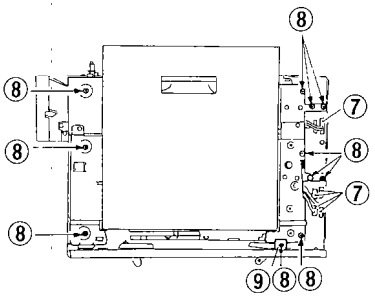


**Figure 4-909**


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### 3. Detaching the Pick-Up Roller, Feeding Roller, and Separation Roller

You can detach the cassette feeding unit's pick-up roller, feeding roller, and separation roller in the same way as detaching each of these rollers from the copier; see A. "Pick-Up Assembly" of III. "PICK-UP/FEEDING SYSTEM."

### 4. Positioning the Pick-Up Roller Release Solenoid (pick-up assembly)

Attach the solenoid so that the pick-up roller arm ① butts against the upper stay ② when the plunger of the solenoid is pushed in.

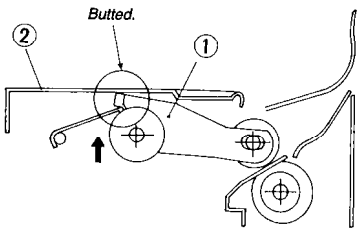


Figure 4-910

### 5. Adjusting the Left/Right Registration

1) Detach the front right cover, front center cover, and front left cover.
2) Loosen the screw ①, and adjust the position of the cassette hook plate ② so that the left/right registration is 0 ±1.5 mm.

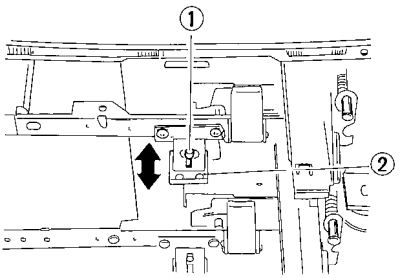


Figure 4-911

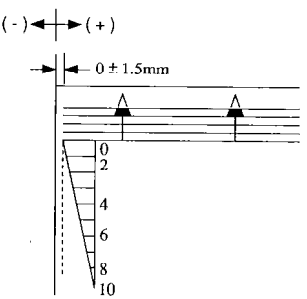


Figure 4-912

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## C. Detaching the Cassette Feeding Unit Motor Drive Assembly

1) Detach the rear cover.
2) Disconnect the three connectors ①.
3) Remove the three screws ②, and detach the cassette feeding unit motor drive assembly ③.

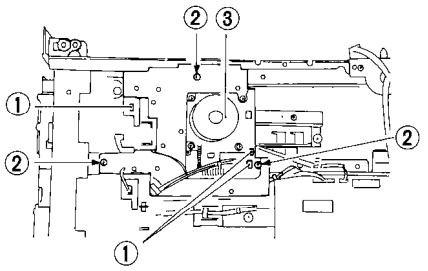


**Figure 4-913**


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# X. DUPLEXING TWO-CASSETTE FEEDING UNIT

## A. Detaching the Duplexing Cassette Feeding Unit from the Copier

1) Disconnect the copier's power plug.
2) Disconnect the cassette feeding unit's connector ① from the copier.

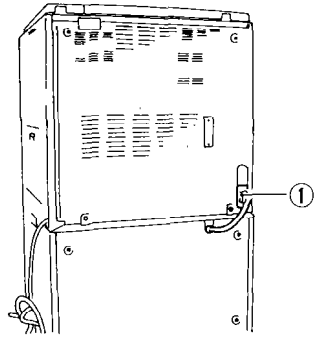


**Figure 4-1000**

3) Open the cassette feeding unit's right door.
4) Remove the three screws ②, and detach the leaf spring ③.

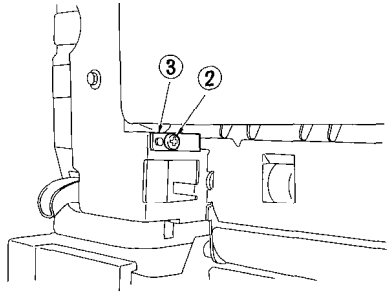


**Figure 4-1001**

5) Open the delivery vertical path assembly.
6) Hold the copier's four grips, and detach the copier from the cassette feeding unit.

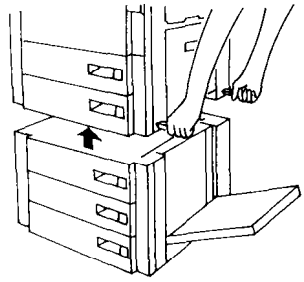

**Figure 4-1002**

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# B. Pick-Up Assembly

## 1. Detaching the Pick-Up Assembly

1) Slide out the cassettes from the cassette feeding unit.
2) Slide out the holding unit about 10 cm.

**Note:**
**Do not try to detach the pick-up assembly with the holding tray or cassette inside; otherwise, the lifter would become trapped, preventing the detachment of both pick-up assembly and cassette.**

3) Shift the lifter release arm ① in the direction of the arrow to shift down the lifter.

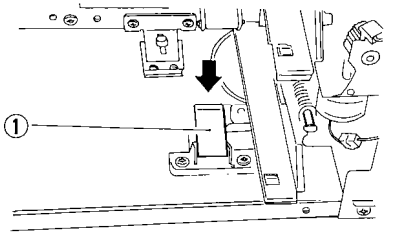


**Figure 4-1003**

4) Detach the front right cover.
5) Detach the right cover.
6) Disconnect the three connectors of the lifter motor.
7) Remove the four screws ③, and detach the cassette lifter motor assembly ④.

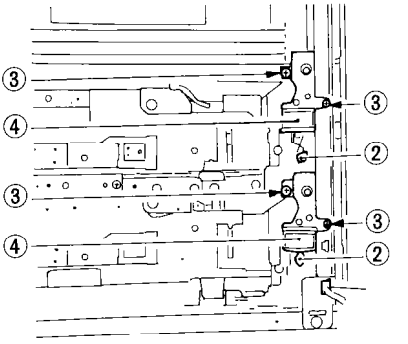


**Figure 4-1004**

8) Remove the screw ⑤, and detach the leaf spring ⑥.

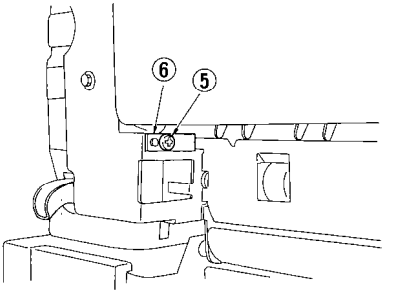


**Figure 4-1005**


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9) Disconnect the five connectors ⑧.
10) Detach the copier's right cover.
11) Remove the eleven screws ⑨, and detach the pick-up assembly reinforcement plate and pick-up assembly.

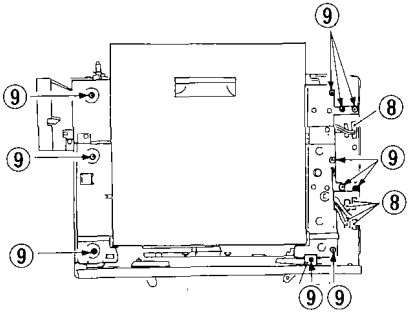


Figure 4-1006

**Note:**
After attaching the pick-up assembly to the copier, make sure that the feet of the fixing assembly is under the lifter release arm.

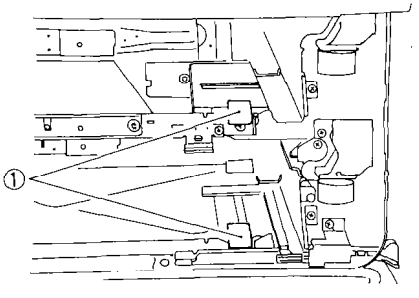


Figure 4-1007

## 2. Detaching the Pick-Up Roller, Feeding Roller, and Separation Roller

You can detach the cassette feeding unit's pick-up roller, feeding roller, and separation roller in the same way as detaching each of these rollers from the copier; see A "Pick-Up Assembly" of III. "PICK-UP/FEEDING SYSTEM."

However, you must go through the following steps to detach the feeding roller from the holding tray assembly:

1) Detach the pick-up assembly.
2) Remove the screw ①, and detach the pick-up roller arm bushing ②.

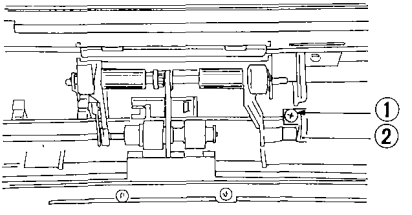


Figure 4-1008

3) Remove the stop ring ③ from the feeding roller.
4) Detach the belt ④ from the pulley.

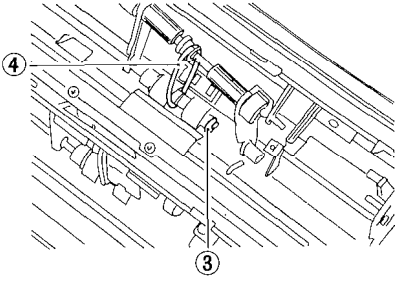


Figure 4-1009

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5) Detach the feeding roller ⑤.

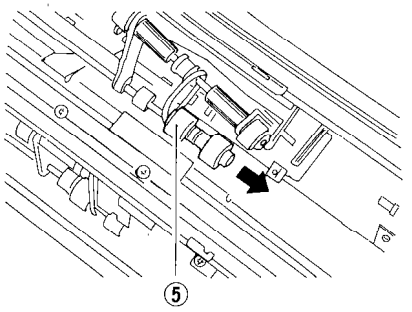


Figure 4-1010

## 3. Adjusting the Left/Right Registration for Pick-Up from a Cassette

1) Detach the front right cover.
2) Loosen the screw ①, and adjust the position of the cassette plate ② so that the left/right registration is 0 ±1.5 mm.

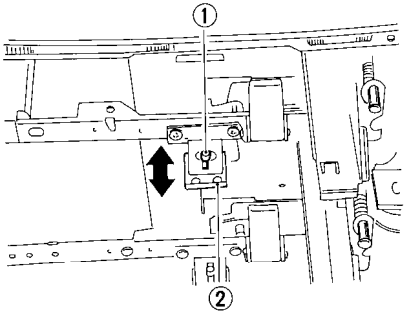


Figure 4-1011

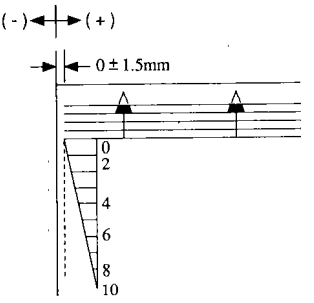


Figure 4-1012

## 4. Positioning the Pick-Up Roller Release Solenoids (pick-up assembly)

Attach the solenoid so that the pick-up roller arm ① butts against the upper stay ② when the plunger of the solenoid is pushed in.

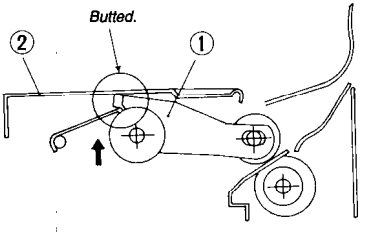


Figure 4-1013


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# C. Holding Tray Unit

## 1. Detaching the Holding Tray Unit

1) Slide out the cassettes.
2) Detach the front left cover and from right cover.
3) Remove the screw, and detach the stopper plate ② (left, right).

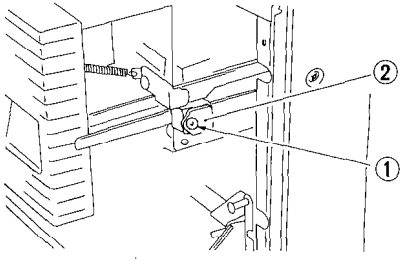


**Figure 4-1014**

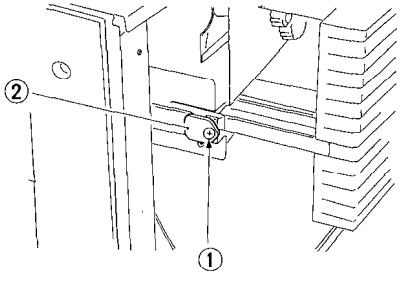


**Figure 4-1015**

4) Slide out the holding tray unit to the front.

## 2. Adjusting the Home Position of the Paper Guide

1) Select A4R or LTRR, and copy on the first side of a two-sided copy.
2) Slide out the holding tray to the front.
3) Measure the distance L of the paper guide ①.

   A4R = 210 ± 0.3 mm
   Letter-R = 216 ± 0.3 mm

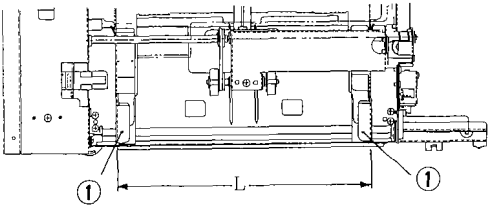


**Figure 4-1016**

4) If the measurement is not as specified, detach the front cover of the holding tray.

5) Loosen the screw ②, and turn the adjusting screw ③ to adjust the position of the paper guide home position sensor.

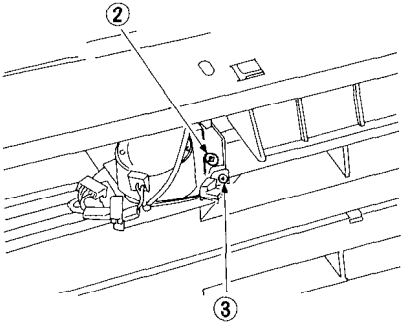


Figure 4-1017

## 3. Adjusting the Left/Right Registration for the Holding Tray Assembly

1) Pull out the holding tray unit.
2) Open the No. 2 feeding assembly.
3) Loosen the screw ①, and adjust the position of the paper guide so that it is 0 ±2.0 mm.

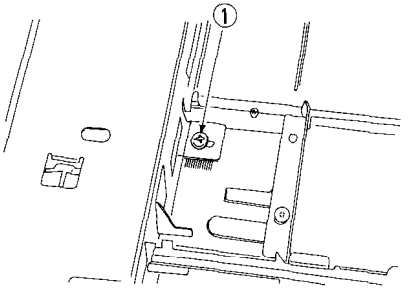


Figure 4-1018

**Note:**
Be sure to have finished adjusting the left-right registration for the cassette before starting the registration.

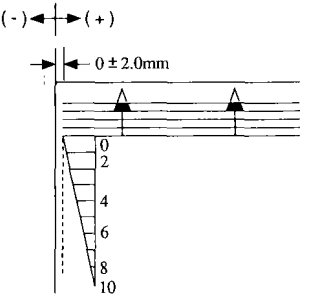


Figure 4-1019

## 4. Adjusting the Position of the Paper Roller Down Solenoid

Let the paper feeding roller drop on its own weight to the bottom of the holding tray.

In this condition, fix the solenoid ③ so that the distance between the lever ① and the arm ② is 1.5 ±0.5 mm when the plunger of the solenoid is pushed.

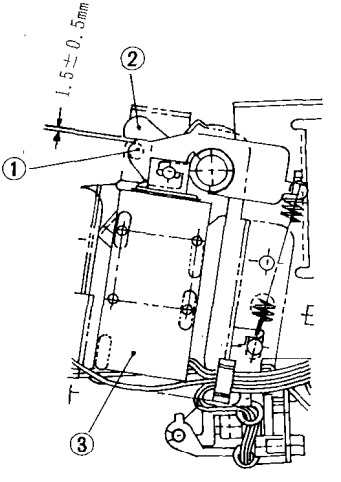


Figure 4-1020


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## 5. Adjusting the Position of the Shutter Solenoid

Fix the solenoid ③ in position so that the gap between the shutter plate ① and the pin ② is 0.5 mm when the plunger of the solenoid is pushed.

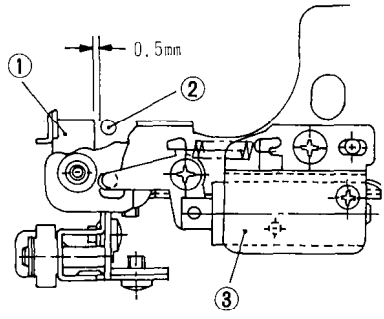


**Figure 4-1021**

## 6. Attaching the Timing Belt for the Paper Guide

Attach the gear ① with the paper guide opened fully.

Attach the timing belt on the gear ① and the pulley ②.

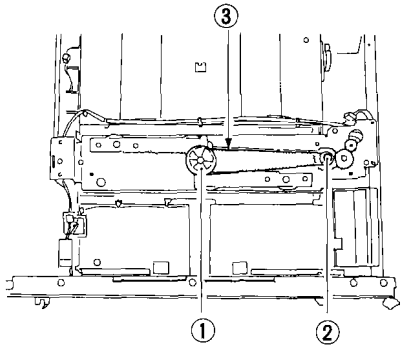


**Figure 4-1022**

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## 7. Adjusting the Tension of the Paper Feeding Roller Drive Belt

Fix the idler ① mount in place while pushing it in the direction of the arrow with a force of 250 g.

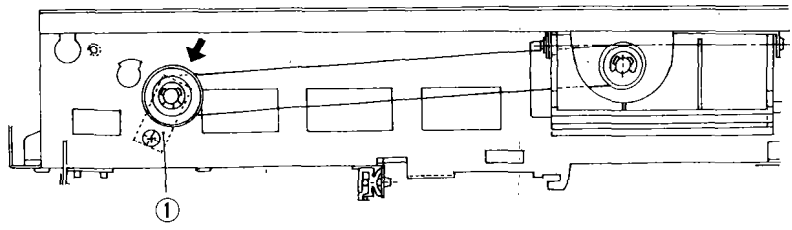


Figure 4-1023

## 8. Adjusting the Tension of the No. 2 Feeding Assembly Drive Belt

Fix the tension mount ① in place while pushing it in the direction of the arrow with a force of 450 ±50 g.

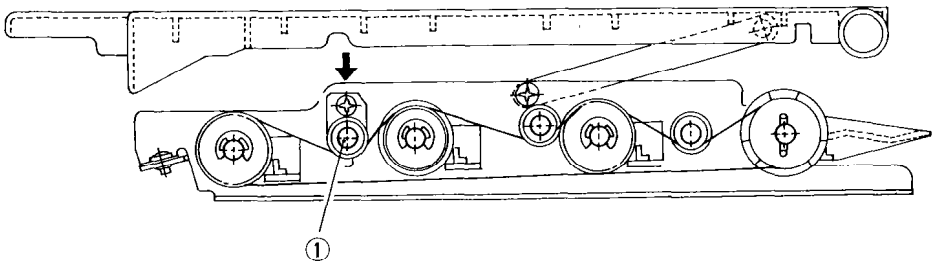


Figure 4-1024


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# D. Delivery Vertical Path Roller Assembly

## 1. Detaching the Delivery Vertical Path Roller Assembly

1) Detach the copier's upper left cover.
2) Detach the claw ① of the cassette feeding unit's left door, and detach the left door cover ②.

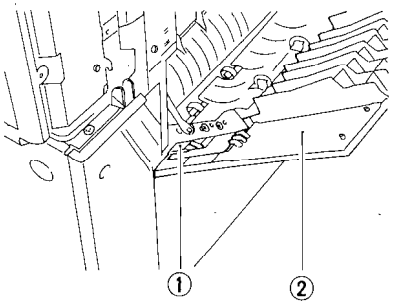


**Figure 4-1025**

3) Open the copier's front door and delivery door.
4) Detach the connector cover.
5) Disconnect the connector ③ for the delivery vertical path sensor.

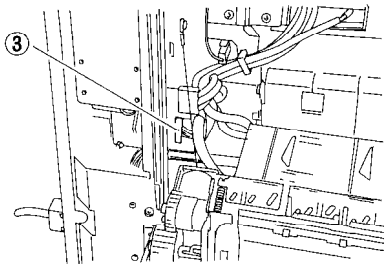


**Figure 4-1026**

6) Remove the clip used to keep the delivery vertical path roller assembly in place (left, right).

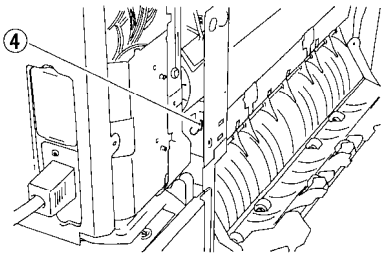


**Figure 4-1027**

7) Detach the delivery vertical path assembly ⑤ while pulling it down.

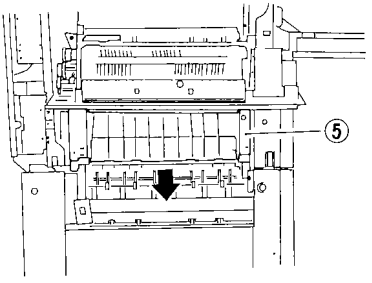


**Figure 4-1028**

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## 2. Attaching the Delivery Vertical Path Roller Assembly

1) Open the reversing unit ① on the left side of the cassette feeding unit. (Open the reversing unit by hooking fingers on its both sides.)

**Note:**
When opening the reversing unit, do not touch the center of the guide.

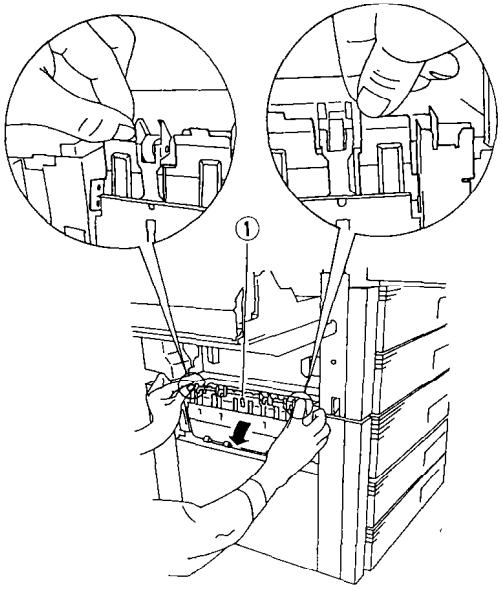


Figure 4-1029

2) Bring the timing belt ③ on the side of the delivery vertical path roller assembly ② to face the front, and insert the delivery vertical path unit from the bottom of the delivery assembly ④.

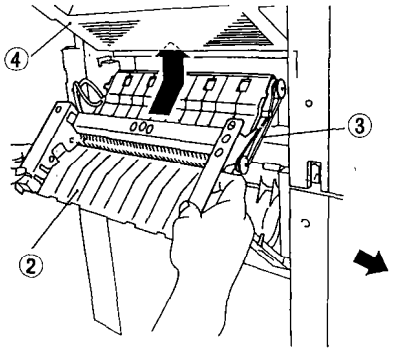


Figure 4-1030

**Note:**
Work while taking care so that the bottom of the roller assembly will not come into contact with the leaf spring ⑤ of the reversing unit spacer.

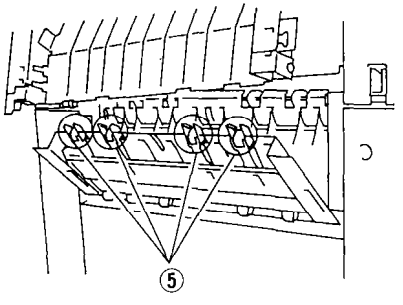


Figure 4-1031


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3) Engage the claw ⑦ found at the top of the duplexing inlet guide of the cassette feeding unit with the cut-out ⑥ found at the front and rear of the bottom of the delivery vertical path roller assembly.

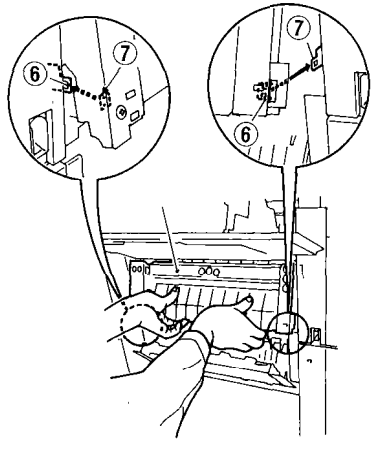


**Figure 4-1032**

At the time, make sure that the timing belt in front of the vertical path roller assembly does not interfere with the claw ⑧ found at the front. Further, make sure that the timing belt ⑨ is securely hooked on the gear.

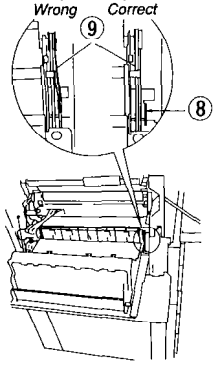


**Figure 4-1033**

4) Fit the two positioning spacers ⑪ in the two holes of the claws ⑩ of the delivery vertical path roller assembly; then, fix the vertical path unit in place.

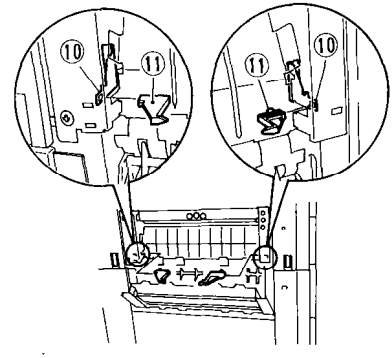


**Figure 4-1034**

5) Connect the connector to the delivery vertical path paper sensor.
6) Attach the connector cover.
7) Attach the door cover to the left door of the cassette feeding unit.

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# E. Reversing Unit

## 1. Detaching the Reversing Unit

1) Detach the cover from the cassette feeding unit's left door.
2) Detach the cassette feeding unit's left cover.
3) Disconnect the two connectors ①.
4) Remove the three screws ②, and detach the reversing unit.

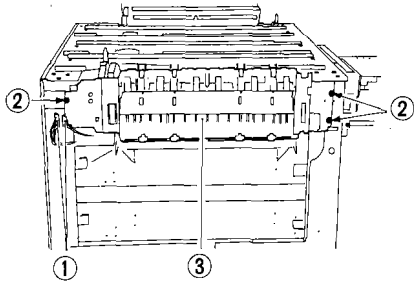


Figure 4-1035

## 2. Points to Note When Attaching the Reversing Unit

Attach the reversing unit as shown in the foregoing steps but in reverse.

After attaching the reversing unit, however, make sure that the reversing overlay unit plate is below the delivery vertical path assembly.

## 3. Adjusting the Position of the No. 2 Paper Deflector Drive Solenoid

Adjust the position of the solenoid so that the flapper lever ① butts against the reversing outer guide ② when the plunger of the solenoid is pushed in.

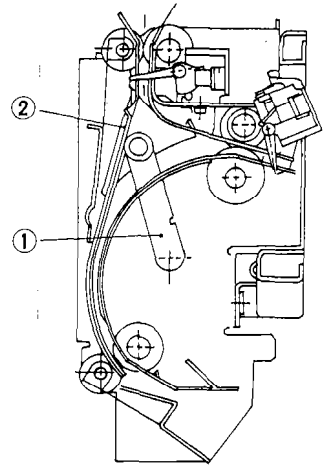


Figure 4-1036


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## F. Detaching the Cassette Feeding Unit Motor Drive Assembly

1) Pull out the holding unit to the front.
2) Detach the rear cover.
3) Detach the drive belt ①.
4) Disconnect the two connectors ②.
5) Remove the three screws, and detach the cassette feeding unit motor drive assembly.

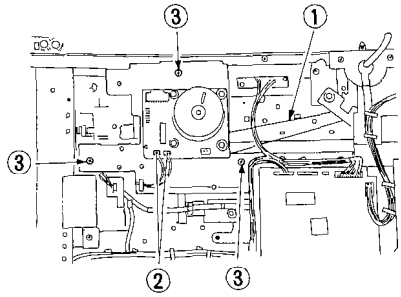


**Figure 4-1037**

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# I. SELECTING THE SITE

Keep the following in mind when selecting the site of installation. If possible, visit the user's prior to the delivery of the copier.

1. The electrical outlet must provide 100 ±10 V, 15 A or more, and allow grounding of the copier.
2. The temperature of the site must be between 7.5° and 30°C and humidity, 10% and 80%; in particular, avoid areas near water faucets, water boilers, humidifiers, and refrigerators.
3. Avoid areas near open fires or areas subject to dust or ammonium gas. Make sure the site is free of direct rays of the sun; otherwise, provide curtains.
4. Make sure that the room is well ventilated.
5. Make sure the floor is level so that all feet of the copier or the pedestal will remain in contact with the floor.
6. Keep the copier at least 10 cm from all walls, and allow for enough space for machine operation.

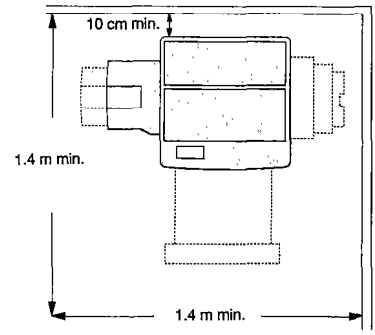


**Figure 5-1**

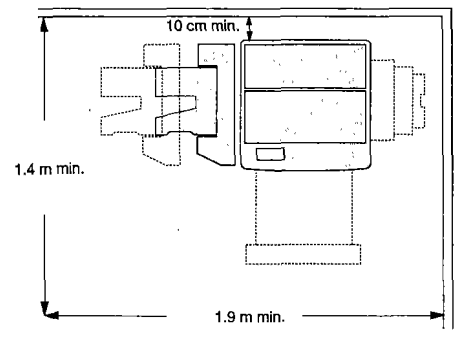


**Figure 5-2 (with sorter)**

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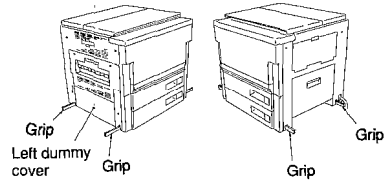
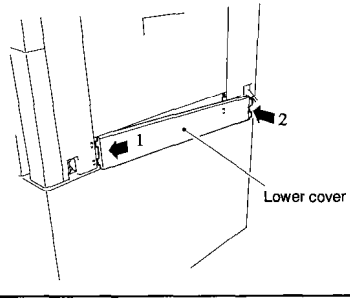
# II. UNPACKING AND INSTALLING THE COPIER

When metal parts are moved from a cold place to a warm place, droplets of water often form on their surfaces. This phenomenon is called *condensation*, and can trigger various problems—in the case of a copier, condensation can cause blank copies. To avoid such problems, keep the copier inside its shipping box for at least one hour before installation if it has been brought from a cold place.

## A. Unpacking and Removing Clamps

| Step | Work | Remarks |
|---|---|---|
| 1 | Open the shipping box. | Make sure that two cassettes are set in the copier. |
| 2 | Remove the plastic cover, and lift the copier by its grips to place it on the pedestal; work in a group of three or more.<br><br>**Note:**<br>See the INSTALLATION PROCEDURE that comes with the pedestal or the cassette feeding unit used. |  |
| 3 | Open the cardboard box, and take out its contents. | Make sure that none of the following is missing:<br>• Copy tray<br>• Work Instructions<br>• Drum unit<br>• Grounding wire<br>• Toner cartridge<br>• Lower right cover<br>• Document tray screw (2)<br>• Document tray<br>• Vertical size plate (3 in a set) |
| 4 | Remove all exterior tape; slide out the cassettes, and remove all shock absorbers from the cassettes; then, set the cassettes in the copier. | Make sure that the Cassette Size Label is in cassette 1. |
| 5 | If you are not using a cassette feeding unit or a duplexing cassette feeding unit, attach the lower right cover. If you are using any of the cassette feeding units, you will not need the lower right cover. |  |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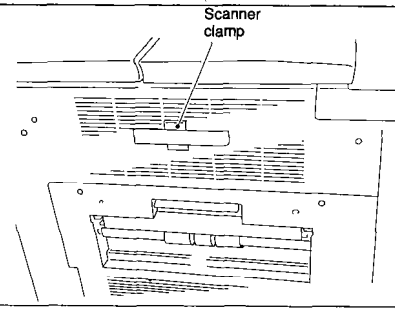
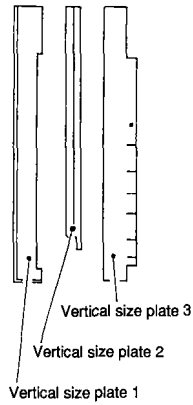
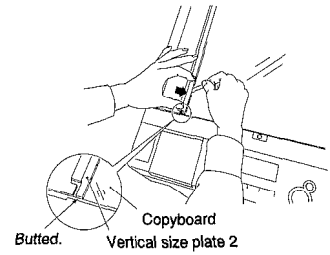
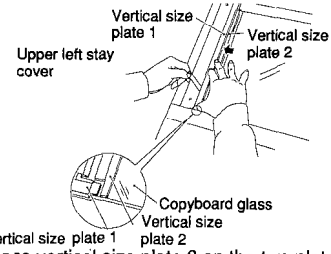
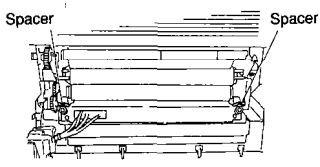
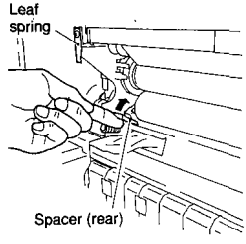
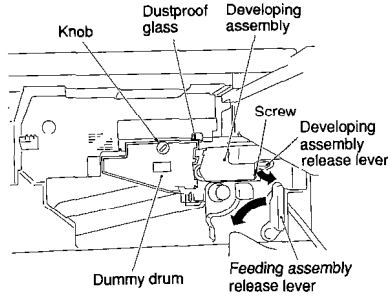
| Step | Work | Remarks |
|---|---|---|
| 6 | Remove the tape from the scanner clamp found on the outside of the left cover; slide the clamp to the right, and pull it to the front to detach.<br>• Keep the clamp for possible relocation of the machine. |  |
| 7 | Open the copyboard cover, and remove the protection sheet. Attach the vertical size plate to the copyboard glass.<br><br>**Note:**<br>If you are attaching a document feeder, use the vertical size plate that comes with the feeder.<br><br>  | 1) Place vertical size plate 2 butted against the left end of the copyboard glass, and set it as shown below. While holding vertical size plate 2, remove the tape behind it and attach the plate.<br>  <br>2) Attach vertical size plate 1 on the upper left stay cover.<br>When attaching the plate, place it as shown below; butt it against the upper left stay cover, and remove the tape from behind while pressing the plate against the copyboard.<br>  <br>3) Place vertical size plate 3 on the two plates that have been attached. |

| Step | Work | Remarks |
|---|---|---|
| 8 | Open the front cover, and open the delivery assembly. |  |
| 9 | Push up the spacer (front, rear) of the fixing roller in the direction of the arrow indicated in the drawing on the right until a click is heard. | |
| 10 | Remove the spacer.<br>• You will not use the spacer. | **Note:**<br>**When detaching the spacer at the rear, pay attention to the leaf spring of the fixing unit.**<br>  |
| 11 | Close the delivery assembly. | |
| 12 | Release the developing assembly. | |
| 13 | Open the hopper to the front, release the feeding assembly; then, detach the knob, and detach the dummy drum from the copier. Thereafter, return the hopper to its original position. |  |
| 14 | Detach the connector cover and disconnect the connector; then, detach the developing assembly. Check the developing cylinder for scratches and dirt. | |
| 15 | Attach the developing assembly; then, connect the connector, attach the connector cover, and fit the screw. | |
| 16 | Lock the developing assembly. | |
| 17 | Make sure that the feeding assembly is released. | |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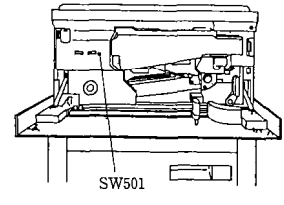
## B. Power-On/Warm-Up

| Step | Work | Remarks |
|---|---|---|
| 1 | Connect the power plug. | **Note:**<br>Make sure that the power supply is 100 ±10 V and 15 A or more. |
| 2 | Insert the door switch actuator to turn on the power. | • Check that the ADD PAPER message comes on.<br>• Press the numeric keypad and CLEAR key to make sure that the correct copy count is indicated. |
| 3 | Supply toner to the hopper according to the instructions on the Toner Supply Label attached behind the front door. | |
| 4 | Set the hopper. | **Note:**<br>If the hopper is properly set in the copier, toner will not be supplied to the developing assembly, thereby locking the hopper motor. |
| 5 | Push the service mode switch (SW501) using a hex key.<br>• Select 'TONER_S' in service mode (✳ 4 ✳), and press the ID key and OK key in sequence. | The copier operates about 6 min, during which toner is supplied from the hopper to the developing assembly. Be sure to finish steps 7 and 8 during the period.<br>**Note:**<br>Do not switch off the copier or remove the door switch actuator while the copier is operating.<br>  <br> |

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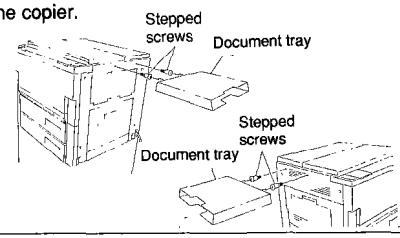
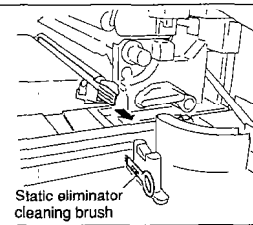
| Step | Work | Remarks |
|---|---|---|
| 6 | Fit the stepped screws as shown in the drawing on the right, and attach the document tray. | You can attach the document tray to either side of the copier.<br>  <br> |
| 7 | Attach the copy tray to the delivery assembly. | |
| 8 | Check that the operation in step 6 has been completed; then, release the developing assembly. | |
| 9 | Open the hopper. | |
| 10 | Pull out the static eliminator, and clean it using a cleaning brush; then, set the eliminator back into its original position. |  <br> |
| 11 | Set the drum unit. | See C. "Attaching the Drum Unit." |
| 12 | Select 'APVC_MR' in service mode (✳ 4 ✳); then, press the OK key. | The copier executes initial rotation, and takes APVC measurements.<br>**Note:**<br>If you fail to execute 'APVC_MR' after attaching the drum unit, the primary corona voltage and scanning lamp drive voltage will not be controlled correctly. |
| 13 | Press the RESET key once to enter service mode (✳ 3 ✳); select 'PRIMARY' and 'IP_OFST', and enter the settings recorded on the Drum Label.<br>Drum Label<br>PRIMARY xx<br>IP_OFST yy | Entering the Settings<br>Enter service mode (✳ 3 ✳), and select 'PRIMARY' using the ☑ key; PRIMARY; 00←[00].<br>Enter the setting indicated on the label using the numeric keypad; PRIMARY: 00←[xx].<br>Press the OK key to acknowledge the setting; PRIMARY; xx←[xx].<br>Press the KEY TO SELECT 'IP_OFST', and operate as above. |
| 14 | Set the settings in user mode and under 'OPTION' in service mode to suit the user's needs. | Set the settings under 'OPTION' in service mode (✳ 5 ✳). |
| 15 | Set the hopper and feeding assembly, and lock the developing assembly. | |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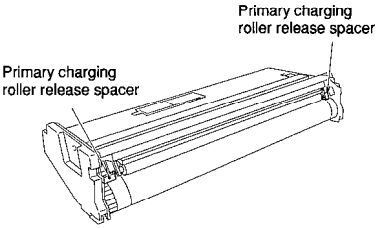
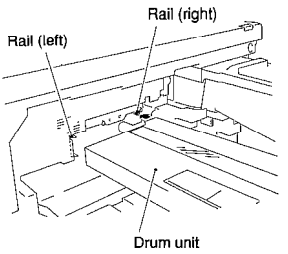
## C. Attaching the Drum Unit

| Step | Work | Remarks |
|---|---|---|
| 1 | Take out the drum unit from its box, and detach the light-blocking sheet. | |
| 2 | Remove the primary charging roller release spacers. |  <br>Pay attention not to damage the surface of the drum or not to touch the primary charging roller. |
| 3 | Set the drum unit in the copier, and fix it in place using the knob used to hold the dummy drum in place. |  <br>Be sure to insert the drum unit straight along the rail in the copier. |
| 4 | Record the necessary information on the Label, and attach it to the drum unit cover. | date<br>date Datum<br>counter<br>compteur Zähler<br>notes<br>note Notiz |

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## D. Checking the Images and Operations

| Step | Work | Checks/Remarks |
|---|---|---|
| 1 | Remove the door switch actuator, and close the front door. | |
| 2 | Change the cassette size to suit the needs of the user.<br>Switch the side guide to suit the paper size; then, put copy paper in the cassette, and adjust the rear guide to suit the end of the paper. | |
| 3 | Detach the cassette size plate from each cassette, and attach the correct Size Label for the new cassette sizes; return the size plate to its original position. | |
| 4 | Set the cassette in the copier. | Make sure that the ADD PAPER message goes off.<br>• Press the keys except for the COPY START key on the control panel to check that all operations are correct. |
| 5 | Set the Test Sheet on the copyboard, and check the copy images. | • Make sure there is no abnormal sound.<br>• Check the copy image for each default reproduction ratio.<br>• Make sure that the specified number of copies is made.<br>• If the copy image is not satisfactory, perform the Image Adjustment Basic Procedure. |
| 6 | Make copies in manual mode. | Make sure that the copy operations are normal. |
| 7 | Check the external covers for scratches and deformations. | |
| 8 | Clean up the site. | |
| 9 | Move the machine to the specified location. | Make sure that the machine is more or less level. |
| 10 | Record necessary information in the Service Sheet. | |

Start installing options after completing all above installation work.


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■ Points to Note When Handling the Photosensitive Drum after Installation

The copier's photosensitive drum is highly susceptible to light; mere exposure to room light can affect the drum enough to produce white spots or black lines on the copies. Keep the following in mind:

- Do not spend more than 5 min when removing jams.
- After detaching the drum unit from the copier during servicing work, be sure to protect it in the light-blocking sheet that came with the drum or fresh copy paper, and place the drum in a dark place.

Do not touch the photosensitive drum or primary charging roller.

If you have soiled the surface of the drum inadvertently, wipe it using a flannel cloth coated with toner; do not use paper, lint-free or otherwise.

Do not dry wipe or use solvent to clean the drum.

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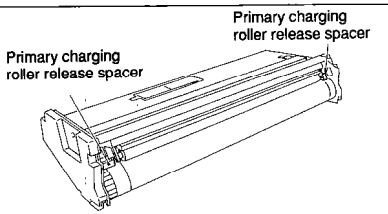
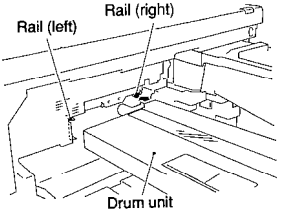
# III. REPLACING THE DRUM UNIT

Go through the following steps when replacing the drum unit.

| Step | Work | Remarks |
|---|---|---|
| 1 | Switch off the copier, and open the front door; then, detach the drum unit. | |
| 2 | Take out the drum unit from the box, and detach the light-blocking sheet. | |
| 3 | Detach the primary charging roller release spacer. |  Pay attention not to damage the surface of the drum and not to touch the primary charging roller. |
| 4 | Set the drum unit in the copier, and fix it in place using the knob used to hold the old drum unit in place. |  Be sure to insert the drum unit straight along the rail in the copier. |
| 5 | Record the necessary information in the Label, and attach the label to the drum unit cover. | date / date Datum \| counter / compteur Zähler \| notes / note Notiz |
| 6 | Insert the door switch actuator, and switch on the copier. | |
| 7 | After the warm-up period is over, press the service mode switch (SW501) using a hex key to enter service mode (✻ 3 ✻), and select 'PRIMARY' and 'IP_OFST', and enter the settings recorded on the drum Label.<br>Drum Label: PRIMARY xx; IP_OFST yy | Entering the Settings<br>Enter service mode (✻ 3 ✻), and select 'PRIMARY' using the ▽ key; PRIMARY; 00←[00].<br>Enter the setting indicated on the label using the numeric keypad; PRIMARY: 00←[xx].<br>Press the OK key to acknowledge the setting; PRIMARY; xx←[xx].<br>Press the KEY TO SELECT 'IP_OFST', and operate as above. |
| 8 | Select 'APVC_MR' in service mode (✻ 4 ✻), and press the OK key. | **Note:**<br>If you fail to execute 'APVC_MR' after replacing the drum unit, the primary corona voltage and scanning lamp drive voltage will not be controlled correctly. |
| 9 | Detach the door switch actuator, and close the front door. | |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# IV. RELOCATING THE COPIER

When relocating the copier after installation by truck or other means of transportation, perform the following work:

| Step | Work | Checks | Remarks |
|---|---|---|---|
| 1 | Move the lens to the DIRECT position. | | The DIRECT position of the lens refers to where the lens stops after warm-up following power-on. |
| 2 | Take out the drum unit. | Keep the drum unit in a box for transport. | |
| 3 | Fix the scanner in place. | | |
| 4 | Tape the corona assemblies and feeding assembly release lever in place so that they will not be displaced by vibration. | | |
| 5 | Tape the front door and delivery assembly in place. | | |
| 6 | Place one sheet of A3 copy paper on the copyboard glass, and tape the copyboard cover. | | |

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# V. CONTROL CARD V

1) Switch off the copier, and open the front door.
2) Detach the control panel.
3) Detach the control card slot face plate ①.
4) Detach the screw ② from the face plate.

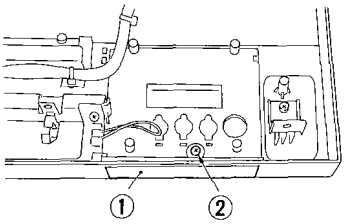


**Figure 5-3**

5) Peel off the protection sheet from the transparent sheet.
6) Place the transparent sheet ③ behind the display.

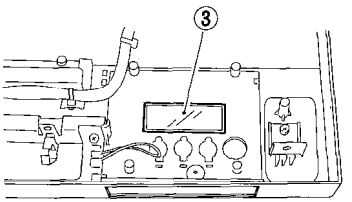


**Figure 5-4**

7) Peel off the protection sheet from the display of Control Card V.
8) Fix Control Card V ⑤ to the control panel using the four screws ④ that come with Control Card V.

**Note:**
**Be sure to lead the harness of Control Card V and the grounding wire ⑦ under Control Card V as shown in Figure 5-5. Otherwise, they can come into contact with the scanner cable.**

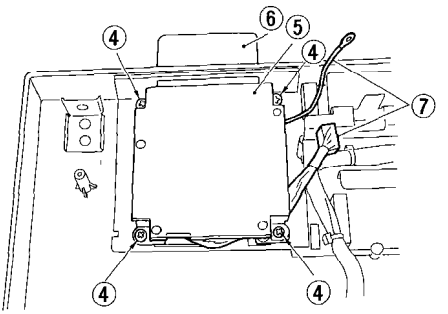


**Figure 5-5**

Further, make sure that the connector ⑧ for the printer is centered over the hole.


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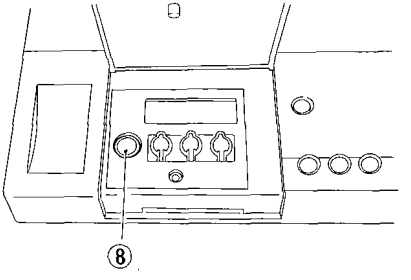


Figure 5-6

9) Attach the control guide ⑨ of Control Card V to the copier's control panel.

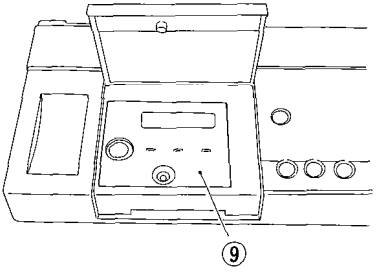


Figure 5-7

10) Disconnect the shorting connector ⑩

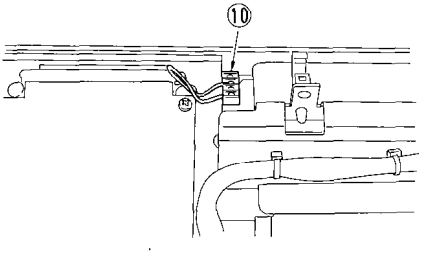


Figure 5-8

11) Connect the 4P connector ⑪ of Control Card V and the 4P connector on the control panel.

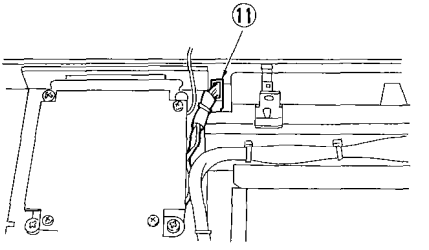


Figure 5-9

12) Attach the control panel; and make sure that the scanner cable is not in contact with the harness.
13) Fix the grounding wire ⑫ of Control Card V to the control panel mount ⑭ using the screw ⑬ that comes with Control Card V.

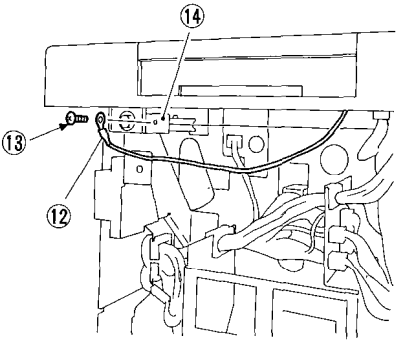


Figure 5-10

14) Switch on the copier, and check the operation of Control Card V.

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# VI. INSTALLING THE COUNTER FOR OPTIONS

1) Open the front door, and detach the inside left cover.
2) Connect the copier's cable ③ to the connector (②; J65) on the options counter PCB ①.

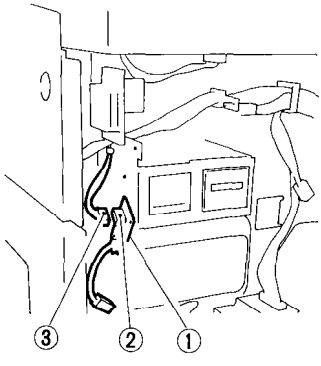


**Figure 4-11**

3) Attach the options counter PCB ① to the copier using two locking supports ④.

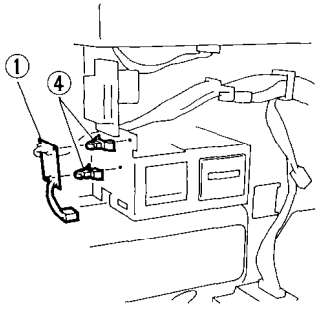


**Figure 4-12**

4) Lead the cable ⑤ of the options counter thorough the hole in the mount; then, fix the connector ⑥ in place.

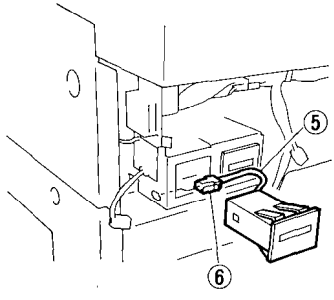


***Figure 4-13***

5) Push in the options counter ⑦ into the hole in the mount, and fix it in place.

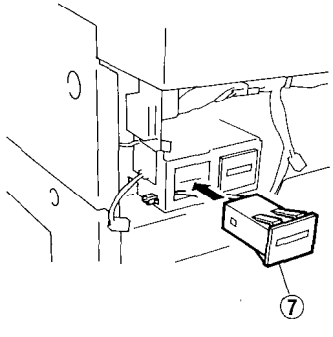


**Figure 4-14**


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6) Connect the cable from the options counter PCB ① to the connector on the options counter.

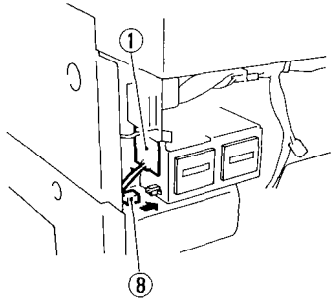


**Figure 4-15**

7) Set the DIP switch (SW9) on the options counter PCB for appropriate counter modes.

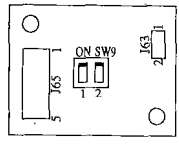


**Figure 4-16**

| DIP SW | | Copy modes for count-up |
|---|---|---|
| 1 | 2 | |
| ON | ON | counts are taken when large-size copies are made |
| OFF | ON | counts are taken when small-size copies are made |
| ON | OFF | counts are taken when two-sided copies are made (at time of delivery) |

**Table 4-1**

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# I. PERIODICALLY REPLACED PARTS

Some parts of the copier must be replaced on a periodical basis to ensure a specific level of machine performance; they must be replaced even in the absence of exterior wear or damage. Schedule the replacement so that they coincide with a service visit.

## A. Periodically Replaced Parts

As of Dec. 1992

| No. | Parts name | Parts No. | Q'ty | Life (copies) | Remarks |
|---|---|---|---|---|---|
| 1 | Static eliminator | FF5-1460 | 1 | 60,000 | |
| 2 | Scanner cooling fan filter | FC1-4217-000 | 1 | 180,000 | or 1 yr |

**Note:**
The values are estimates only and subject to change based on future data.

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# II. DURABLES

Some parts of the copier may have to be replaced over the period of machine warranty because of wear or damage; replace them when they prove to be faulty.

## A. Copier

As of Dec. 1992

| No. | Parts name | | | Parts No. | Q'ty | Life (copies) | Remarks |
|---|---|---|---|---|---|---|---|
| 1 | Transfer roller | | | FG5-1756-000 | 1 | 60,000 | |
| 2 | Scanning lamp (100/115 V) | | | FH7-3242-000 | 1 | 100,000 | |
| | Scanning lamp (220/240 V) | | | FH7-3244-000 | 1 | 100,000 | |
| 3 | Pick-up roller (rear) | | | FF5-1220-000 | 2 | 120,000 | copies processed |
| 4 | Pick-up roller (front) | | | FF5-1221-000 | 2 | 120,000 | copies processed |
| 5 | Separation roller | | | FB1-7060-000 | 2 | 120,000 | copies processed |
| 6 | Feeding roller | | | FB1-7061-000 | 2 | 120,000 | copies processed |
| 7 | Manual feed separation pad | | | FB1-8578-000 | 2 | 120,000 | copies processed |
| 8 | Fixing cleaning belt | | | FA3-8908-000 | 1 | 200,000 | |
| 9 | Upper fixing roller | | | FB1-7956-000 | 1 | 200,000 | |
| 10 | Lower fixing roller | | | FB1-7957-000 | 1 | 200,000 | |
| 11 | Upper fixing separation claw | | | FB1-7075-000 | 5 | 200,000 | |
| 12 | Lower fixing separation claw | | | FA2-9037-000 | 4 | 200,000 | |
| 13 | Insulating bush (fixing assembly) | | | FB1-6823-000 | 2 | 200,000 | |
| 14 | Front blank exposure lamp PCB | | | FG5-1788-000 | 1 | 200,000 | |
| 15 | Fixing heater | Main | 100V | FH7-4350-000 | 1 | 300,000 | |
| | | | 115V | FH7-4352-000 | | | |
| | | | 220/240V | FH7-4354-000 | | | |
| | | Sub | 100V | FH7-4356-000 | 1 | 300,000 | |
| | | | 115V | FH7-4358-000 | | | |
| | | | 220/240V | FH7-4360-000 | | | |
| 16 | Thermistor | | | FH7-7285-000 | 1 | 300,000 | |
| 17 | Developing cylinder | | | FB1-8119-000 | 1 | 300,000 | |

**Note:**
The values are estimates only and subject to change based on future data.


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## B. Duplexing Two-Cassette Feeding Unit

As of Dec. 1992

| No. | Parts name | Parts No. | Q'ty | Life (copies) | Remarks |
|---|---|---|---|---|---|
| 1 | Pick-up roller (rear) | FF5-1220-000 | 2 | 120,000 | copies processed |
| 2 | Pick-up roller (front) | FF5-1221-000 | 2 | 120,000 | copies processed |
| 3 | Separation roller | FB1-7061-000 | 2 | 120,000 | copies made |
| 4 | Feeding roller | FB1-7060-000 | 2 | 120,000 | copies processed |

**Note:**
The values are estimates only and subject to change based on future data.

## C. Three-Cassette Feeding Unit

As of Dec. 1992

| No. | Parts name | Parts No. | Q'ty | Life (copies) | Remarks |
|---|---|---|---|---|---|
| 1 | Pick-up roller (rear) | FF5-1220-000 | 3 | 120,000 | copies processed |
| 2 | Pick-up roller (front) | FF5-1221-000 | 3 | 120,000 | copies processed |
| 3 | Separation roller | FB1-7061-000 | 3 | 120,000 | copies made |
| 4 | Feeding roller | FB1-7060-000 | 3 | 120,000 | copies processed |

**Note:**
The values are estimates only and subject to change based on future data.

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# III. SCHEDULED SERVICING

**Note:**
1. As a rule, provide scheduled servicing every 200,000 copies.
2. Check the Service Record before setting off for a visit; take parts if replacement is expected.

| No. | Work | Checks | Remarks |
|---|---|---|---|
| 1 | Meet the person in charge | Check the general condition. | |
| 2 | Record the copy count. | Check faulty copies. | |
| 3 | Make test copies.<br>• DIRECT, REDUCE, EN-LARGE page separation | Check the following:<br>a. image density<br>b. dirt on white background<br>c. clarity of characters<br>d. leading edge non-image width<br>e. left/right margin<br>f. fixing, registration, dirt on back of copy<br>g. abnormal noise<br>h. counter operation | standard: 2.5 ±1.5 mm (DIRECT/one side)<br>standard: 2.5 ±1.5 mm (DIRECT/one side) |
| 4 | Clean the static eliminator and feeding assembly. | | Clean the static eliminator using the brush that comes with the copier. |
| 5 | *Clean the fixing assembly and* delivery assembly.<br>• paper guide<br>• separation claw (upper, lower)<br>• static eliminating brush | | *solvent*<br>solvent |
| 6 | Provide scheduled servicing to suit the number of copies made; see p. 6-1. | | |
| 7 | Clean the copyboard cover and copyboard glass. | | |
| 8 | Make test copies. | | |
| 9 | Make sample copies. | | |
| 10 | Put sample copies in order, and clean up the site of installation. | | |
| 11 | Record the final copy count. | | |
| 12 | Enter necessary information in the Service Record. | | |


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# IV. TABLE OF SCHEDULES SERVICING

**Note:**
Do not use solvents or oils other than those specified herein.

## A. Copier

△ : Clean ● : Replace ☆ : Oil □ : Adjust ◎ : Inspect or Clean

| Unit | Item | every 20,000 | every 60,000 | every 180,000 | every year | Remarks |
|---|---|---|---|---|---|---|
| Externals | Copyboard glass | △ | | | | Use alcohol. |
| Scanner drive assembly | Scanner rail | | △ | | | Use alcohol. |
| Feeding assembly | Transfer guide assembly | △ | | | | Use a cloth moistened with water. |
| | Feeding belt | △ | | | | |
| | Feeding assembly mount | △ | | | | |
| Optical path assembly | Scanning reflector | △ | | | | Use a blower brush; if necessary, use alcohol. |
| | Scanning side reflector | △ | | | | |
| | No. 1 through No. 6 mirrors | △ | | | | |
| | Lens | △ | | | | |
| | Dustproof glass | △ | | | | |
| | Document size identification unit | △ | | | | |
| | Scanner cooling fan filter | | | ● | ● | Replace every 180,000 copies or 1 yr. |
| Corona assembly | Static eliminator | △ | ● | | | |
| Fixing assembly | Upper fixing roller | △ | | | | Use cleaning oil. |
| | Lower fixing roller | △ | | | | |
| | Separation claw (upper, lower) | △ | | | | Use solvent. |
| | Paper guide | △ | | | | |

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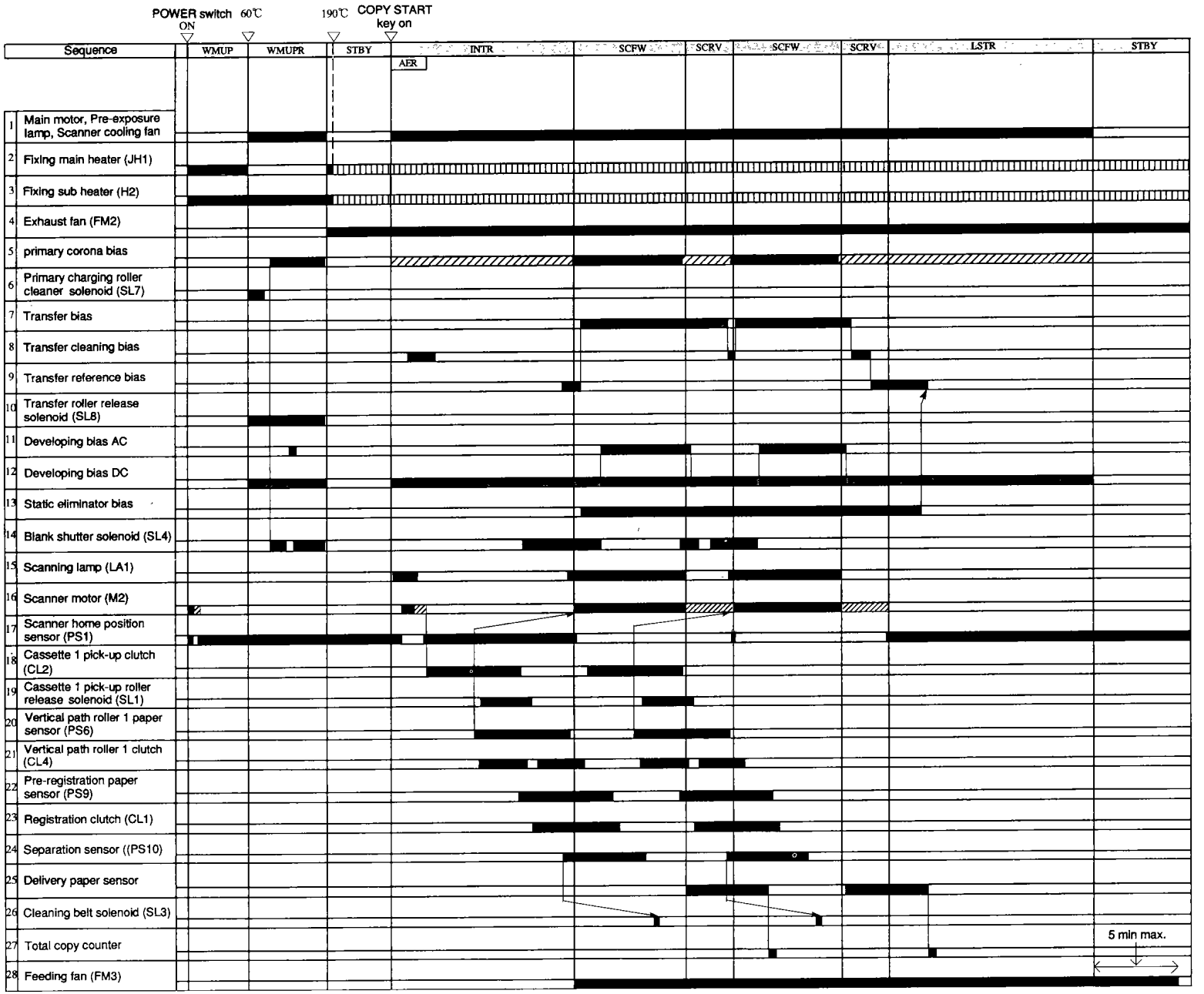
A4, 2 copies, DIRECT, one-sided, pick-up from cassette 1

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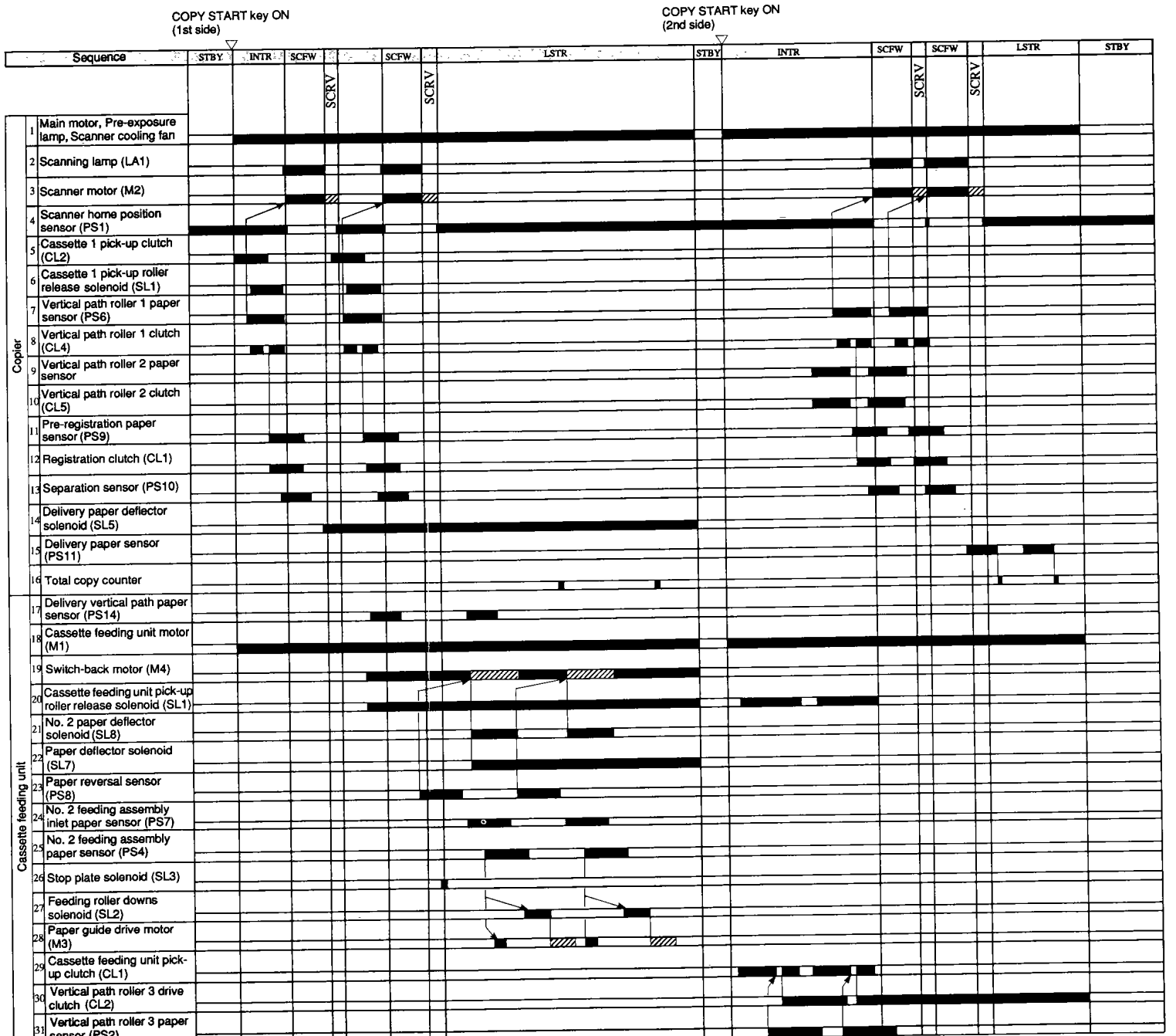
COPY START key ON (1st side)
COPY START key ON (2nd side)
Sequence
STBY
INTR
SCFW
SCRV
LSTR
Copier
Cassette feeding unit
1 Main motor, Pre-exposure lamp, Scanner cooling fan
2 Scanning lamp (LA1)
3 Scanner motor (M2)
4 Scanner home position sensor (PS1)
5 Cassette 1 pick-up clutch (CL2)
6 Cassette 1 pick-up roller release solenoid (SL1)
7 Vertical path roller 1 paper sensor (PS6)
8 Vertical path roller 1 clutch (CL4)
9 Vertical path roller 2 paper sensor
10 Vertical path roller 2 clutch (CL5)
11 Pre-registration paper sensor (PS9)
12 Registration clutch (CL1)
13 Separation sensor (PS10)
14 Delivery paper deflector solenoid (SL5)
15 Delivery paper sensor (PS11)
16 Total copy counter
17 Delivery vertical path paper sensor (PS14)
18 Cassette feeding unit motor (M1)
19 Switch-back motor (M4)
20 Cassette feeding unit pick-up roller release solenoid (SL1)
21 No. 2 paper deflector solenoid (SL8)
22 Paper deflector solenoid (SL7)
23 Paper reversal sensor (PS8)
24 No. 2 feeding assembly inlet paper sensor (PS7)
25 No. 2 feeding assembly paper sensor (PS4)
26 Stop plate solenoid (SL3)
27 Feeding roller downs solenoid (SL2)
28 Paper guide drive motor (M3)
29 Cassette feeding unit pick-up clutch (CL1)
30 Vertical path roller 3 drive clutch (CL2)
31 Vertical path roller 3 paper sensor (PS2)



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# B. LIST OF SIGNALS/COMMAND

## 1. Signals and Command

| | |
|---|---|
| ACBIAS | AC DEVELOPING BIAS DRIVE command |
| AE | AE SENSOR OUT PUT signal |
| AEREF | AE SENSOR REFERENCE signal |
| BIASS | DEVELOPING BIAS VOLTAGE DETECTION signal |
| BLB-A | BLANK MOTOR (BACK) DRIVE PULSE command A |
| BLB-B | BLANK MOTOR (BACK) DRIVE PULSE command B |
| BLBHP | BLANK SHUTTER (BACK) HOME POSITION signal |
| BLF-A | BLANK MOTOR (FRONT) DRIVE PULSE command A |
| BLF-B | BLANK MOTOR (FRONT) DRIVE PULSE command B |
| BLFHP | BLANK SHUTTER (FRONT) HOME POSITION signal |
| BLHLD | BLANK MOTOR HOLD command |
| BPWM | DEVELOPING BIAS DC COMPONENT DRIVE command |
| C1LTP | CASSETTE 1 LIFTER POSITION signal |
| C1PD | CASSETTE 1 PAPER DETECTION signal |
| C1PW | CASSETTE 1 PAPER WIDTH SIZE signal |
| C1SZ1 | CASSETTE 1 PAPER LENGTH SIZE signal 1 |
| C1SZ2 | CASSETTE 1 PAPER LENGTH SIZE signal 2 |
| C2LTP | CASSETTE 2 LIFITER POSTION signal |
| C2PD | CASSETTE 2 PAPER DETECTION signal |
| C2PW | CASSETTE 2 PAPER WIDTH SIZE signal |
| C2SZ1 | CASSETTE 2 PAPER LENGTH SIZE signal 1 |
| C2SZ2 | CASSETTE 2 PAPER LENGTH SIZE signal 2 |
| C3LMD | CASSETTE 3 LIFTER MOTOR DRIVE command |
| C3LTP | CASSETTE 3 LIFTER POSITION signal |
| C3PD | CASSETTE 3 PAPER DETECTION signal |
| C3PPW | CASSETTE 3 PAPER WIDTH SIZE signal |
| C3RP | CASSETTE 3 PICK-UP ROLLER RELEASE SOLENOID DRIVE command |
| C3SZ1 | CASSETTE 3 PAPER LENGTH SIZE signal 1 |
| C3SZ2 | CASSETTE 3 PAPER LENGTH SIZE signal 2 |
| C4LMD | CASSETTE 4 LIFTER MOTOR DRIVE command |
| C4LTP | CASSETTE 4 LIFTER POSITION signal |
| C4PD | CASSETTE 4 PAPER DETECTION signal |
| C4PPW | CASSETTE 4 PAPER WIDTH SIZE signal |
| C4PRL | CASSETTE 4 PICK-UP ROLLER RELEASE SOLENOID DRIVE command |
| C4PU | CASSETTE 4 PICK-UP ROLLER CLUTCH DRIVE command |
| C4SZ1 | CASSETTE 4 PAPER LENGTH SIZE signal 1 |
| C4SZ2 | CASSETTE 4 PAPER LENGTH SIZE signal 2 |
| C4VRD | VERTICAL PASS ROLLER 4 CLUTCH DRIVE command |
| C5LMD | CASSETTE 5 LIFTER MOTOR DRIVE command |
| C5LTP | CASSETTE 5 LIFTER POSITION signal |
| C5PD | CASSETTE 5 PAPER DETECTION signal |
| C5PPW | CASSETTE 5 PAPER WIDTH SIZE signal |
| C5PRL | CASSETTE 5 PICK-UP ROLLER RELEASE SOLENOID DRIVE command |
| C5PU | CASSETTE 5 PICK-UP ROLLER CLUTCH DRIVE command |
| C5SZ1 | CASSETTE 5 PAPER LIFTER SIZE signal 1 |
| C5SZ2 | CASSETTE 5 PAPER LIFTER SIZE signal 2 |
| C5VRD | VERTICAL PASS ROLLER 5 CLUTCH DRIVE command |
| CBCC | COPYBOARD COVER CLOSED command |
| CL1D | CASSETTE 3 PICK-UP ROLLER CLUTCH DRIVE command |
| CL1D | REGISTRATION ROLLER CLUTCH DRIVE command |
| CL2D | VERTICAL PASS ROLLER 3 CLUTCH DRIVE command |
| CL2D | CASSETTE 1 PICK-UP ROLLER CLUTCH DRIVE command |
| CL3D | CASSETTE 2 PICK-UP ROLLER CLUTCH DRIVE command |
| CL4D | VERTICAL PASS ROLLER 1 CLUTCH DRIVE command |
| CL5D | VERTICAL PASS ROLLER 2 CLUTCH DRIVE command |
| CL6D | MALTIFEED ROLLER CLUTCH DRIVE command |
| CL9D | DEVELOPINNG CLUTCH DRIVE command |
| DRMCK | MAIN MOTOR CLOCK signal |
| CNT1D | TOTAL COUNTER DRIVE command |
| CS1 | COUNTER DRIVE SWITCHING signal 1 |
| CS2 | COUNTER DRIVE SWITCHING signal 2 |
| FM1D | SCANNER COLLING (FM1) DRIVE command |
| FM2D | EXHAUST FAN (FM2) DRIVE command |
| FM3D | FEEDER FAN (FM4) DRIVE command |
| HVLIMIT | STATIC ELIMINATOR BIAS LEAKAGE DETECTION signal |
| HVPWM | HIGHT VOLTAGE TRANSFORMER DRIVE PULSE command |
| HVTS | TRANSFER BIAS VOLTAGE DETECTION signal |
| JCTL | STATIC ELIMINATOR BIAS SWITCHING command |
| LEXA | LANS X MOTOR DRIVE PULSE command A |
| LEXB | LANS X MOTOR DRIVE PULSE command B |
| LEXHLD | LENS X MOTOR HOLD command |
| LEYA | LENS Y MOTOR DRIVE PULSE command A |
| LEYB | LENS Y MOTOR DRIVE PULSE command B |
| LEYHLD | LENS Y MOTOR HOLD command |
| LFDO | LEFT DOOR OPEN signal |
| LOCK | MAIN MOTOR LOCK signal |
| LSLD | PAPER DIFLECTOR L SOLENOID DRIVE command |
| LXHP | LENS X HOME POSITION signal |
| LYHP | LENS Y HOME OPSITION signal |
| MPWM | MAIN TRANSFORMER DRIVE PULSE command |
| M3D | HOPPER MOTOR DRIVE command |
| M4D | CASSETTE 1 LIFTER MOTOR DRIVE command |
| M5D | CASSETTE 2 LIFTER MOTOR DRIVE command |
| MFPD | MULTIFEEDER PAPER DETECTION signal |
| MFPW | MULTIFEEDER PAPER WIDTH SIZE signal |
| MHRD | MAIN HEATER DRIVE command |



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| | |
|---|---|
| MMCLK | MAIN MOTOR CLOCK signal |
| M1D | MAIN MOTOR DRIVE command |
| MSLD | PAPRE DIFLECTOR M SOLENOID DRIVE command |
| MSSRD | MAIN SSR DRIVE COMMAND |
| PDP1 | PAPER DETECTION signal 1 |
| PDP2 | PAPER DETECTION signal 2 |
| PDP3 | PAPER DETECTION signal 3 |
| PDP4 | PAPER DETECTION signal 4 |
| PDP5 | PAPER DETECTION signal 5 |
| PDP6 | PAPER DETECTION signal 6 |
| PDP7 | PAPER DETECTION signal 7 |
| PDP8 | PAPER DETECTION signal 8 |
| PDP9 | PAPER DETECTION signal 9 |
| PDP10 | PAPER DETECTION signal 10 |
| PDP11 | PAPER DETECTION signal 11 |
| PDP12 | PAPER DETECTION signal 12 |
| PDP6 | PAPER DETECTION signal 6 |
| PEDMD | PEDISTAL MOTOR DRIVE command |
| PEXP | PRE-CONDITIONNIG EXPOSURE LAMP LIT command |
| PLOCK | PEDESTAL MOTOR LOCK signal |
| PRDOO | PEDESTAL RIGHT DOOR OPEN signal |
| PWOFF | POWER SWITCH OFF command |
| RDC | RIGHT DOOR OPEN signal |
| RDSD | PAPER FEED ROLLER DOWN SOLENOID DRIVE command |
| SCDP | SCANNER ATLEADING EGDE OPSISION signal |
| SCFW | SCANNER FORWARD command |
| SCMD | SCANNER MOTOR DRIVE command |
| SCMHLD | SCANNER MOTOR HOLD command |
| SCRC0 | REPRODUCTION RATIO SELECT command 0 |
| SDRC1 | REPRODUCTION RATIO SELECT command 1 |
| SCT1～10 | SCANNER MOTOR DRIVE PULSE command |
| SERVICE | SERVICE MODE SWITCH signal |
| SHRD | SUB HERTER DRIVE command |
| SL1D | CASSETTE 1 PICK-UP ROLLER RELEASE SOLENOID DRIVE command |
| SL2D | CASSETTE 2 PICK-UP ROLLER PRLEASE SOLENOID DRIVE command |
| SL3D | CLEANING BELT SOLENOID DRIVE command |
| SL3D | PAPER STOP PLATE DOWN command |
| SL3DU | PAPER STOP PLATE UP command |
| SL4D | BLANK SHUTTER SOLENOID DRIVE command |
| SL5D | PAPER DIFLECTOR SOLENOID DRIVE command |
| SL6D | MUTIFEED ROLLER SOLENOID DRIVE command |
| SL7D | PRIMARY CHARGING ROLLER CLEANING SOLENOID DRIVE command |
| SL8D | PAPER DIFLECTOR 2 SOLENOID DRIVE command |
| SL8D | TRANSFER CHARGING ROLLER RELEASE SOLENOID DRIVE command |
| SSLD | PAPER DIFLECTOR S SOLENOID DRIVE command |
| SSSLD | PAPER DIFLECTOR SS SOLONOID DRIVE command |
| SSSRD | SUB SSR DRIVE command |
| SZ1 | DOCUMENT SIZE DETECTION signal 1 |
| SZ2 | DOCUMENT SIZE DETECTION signal 2 |
| SZ3 | DOCUMENT SIZE DETECTION signal 3 |
| SZ4 | DOCUMENT SIZE DETECTION signal 4 |
| T-CC | TRANSFER BIAS (2) DRIVE command |
| T-FW | TRANSFER BIAS (1) DRIVE command |
| T-PRTCT | TRANSFER BIAS ERROR DETECTION signal |
| T-REV | TRANSFER BIAS (3) DRIVE command |
| TEP | TONER EMPTY signal |
| TH1 | FIXING THERMISTOR signal |
| TN-OUT | TONER OUT signal |

## 2. List of Abbreviations

| | |
|---|---|
| AER | AE ROTATION |
| FEDR | FEED ROTATION |
| INTR | INTIAL ROTATION |
| LSTR | LAST ROTATION |
| SCFW | SCANNER FORWARD |
| SCRV | SCANNER REVERSE |
| STBY | STANDBY |
| WMUP | WARM UP |
| WMUPR | WARM UP ROTATION |



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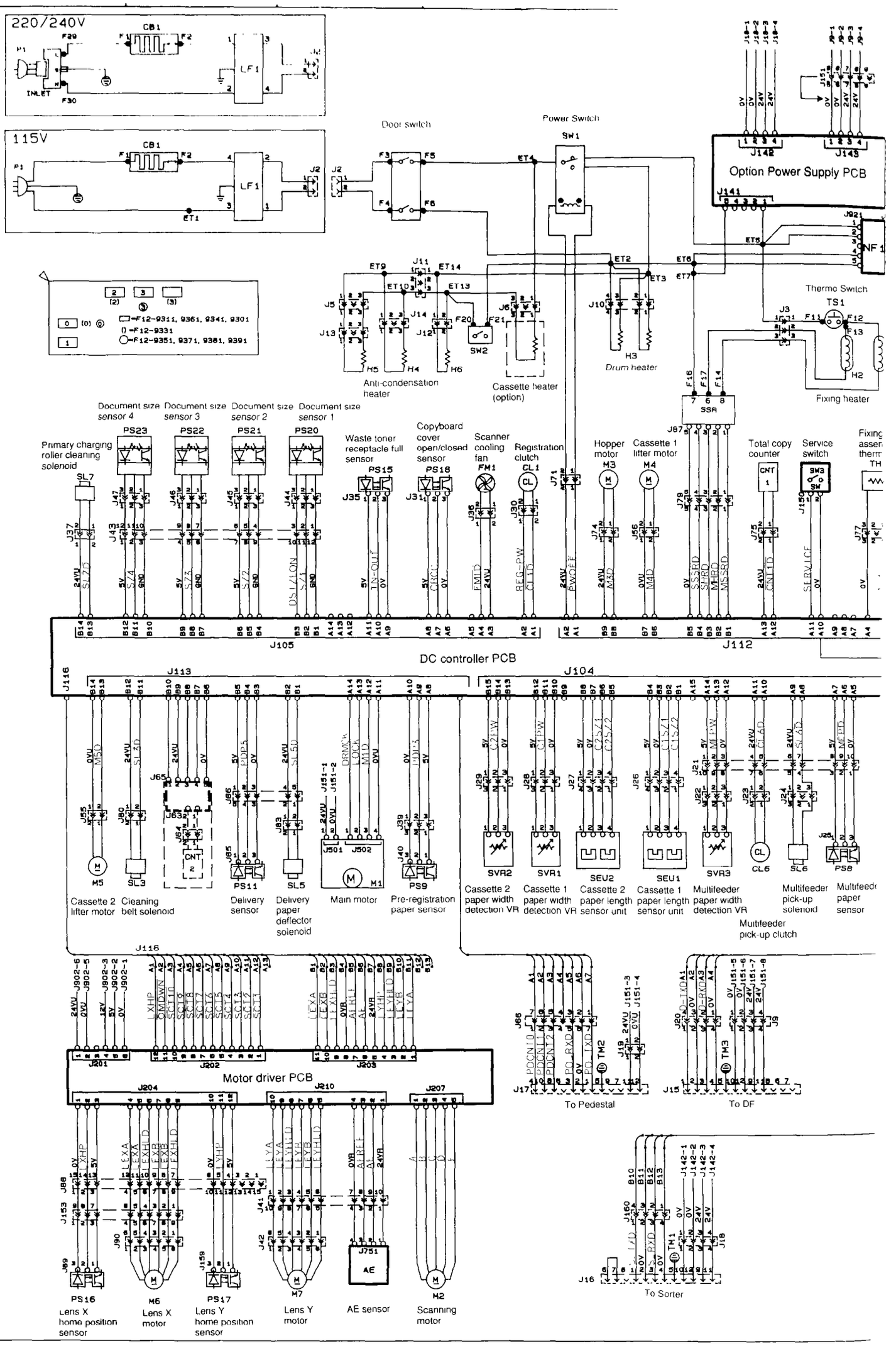
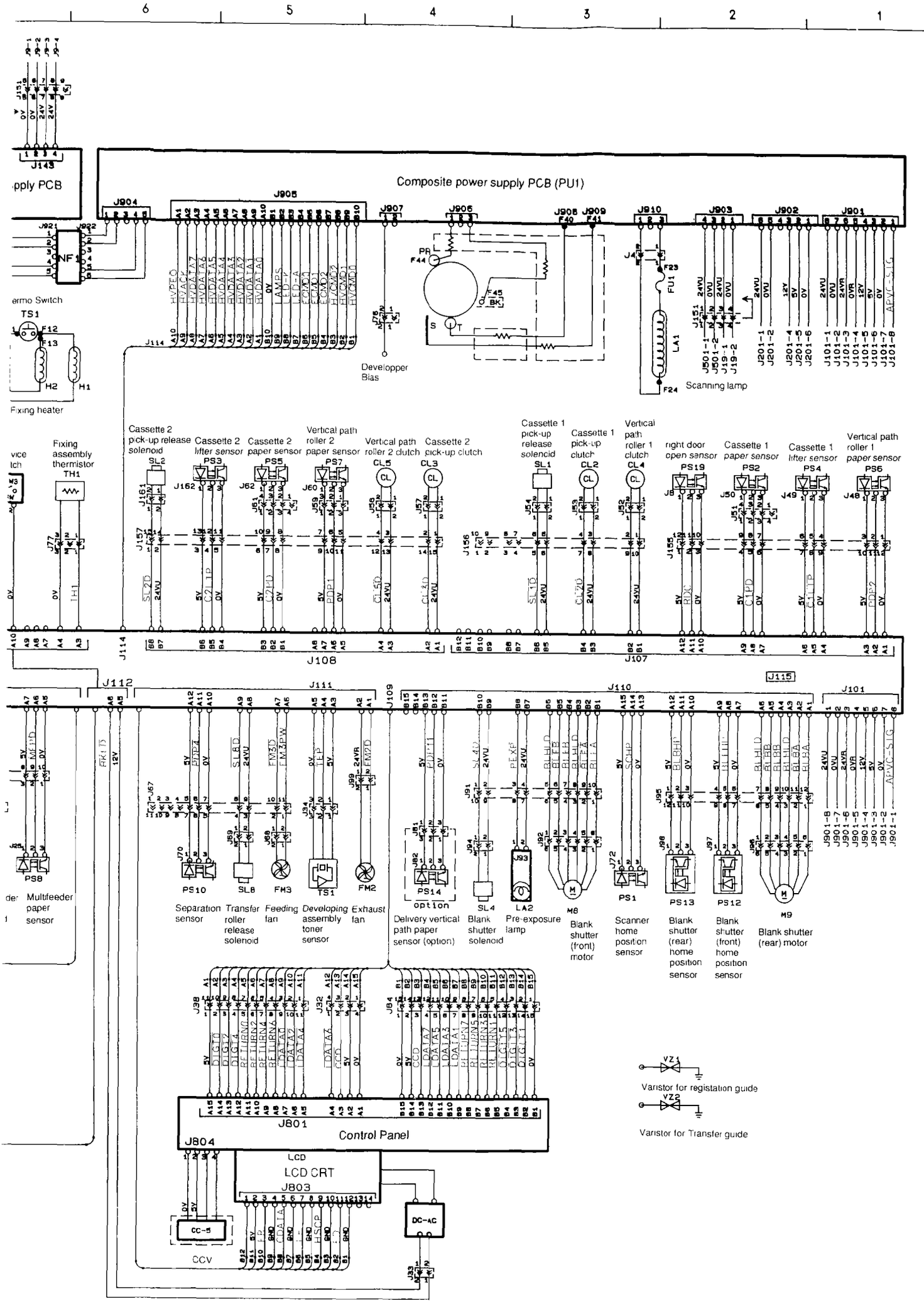
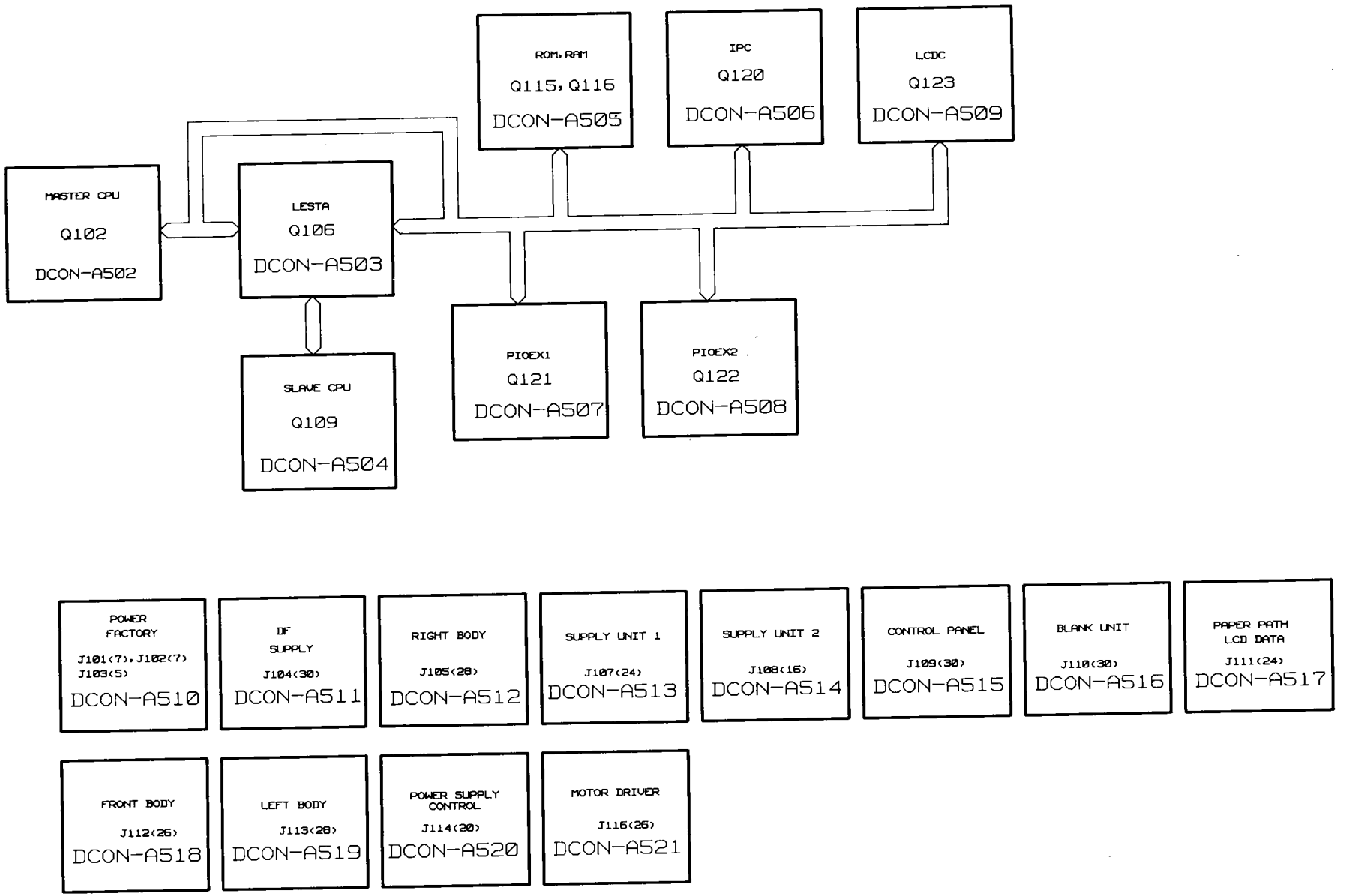

220/240V
115V
CB1
LF1
INLET
Door switch
Power Switch
SW1
Option Power Supply PCB
J142
J143
J141
NF1
Thermo Switch
TS1
SW2
H1
H2
H3
H4
H5
H6
Drum heater
Fixing heater
Anti-condensation heater
Cassette heater (option)
SSR
Document size sensor 4
Document size sensor 3
Document size sensor 2
Document size sensor 1
PS23
PS22
PS21
PS20
Primary charging roller cleaning solenoid
SL7
Waste toner receptacle full sensor
PS15
Copyboard cover open/closed sensor
PS18
Scanner cooling fan
FM1
Registration clutch
CL1
Hopper motor
M3
Cassette 1 lifter motor
M4
Total copy counter
Service switch
SW3
J105
J112
DC controller PCB
J116
J113
J104
Cassette 2 lifter motor
M5
Cleaning belt solenoid
SL3
Delivery sensor
PS11
Delivery paper deflector solenoid
SL5
Main motor
M1
Pre-registration paper sensor
PS9
Cassette 2 paper width detection VR
SVR2
Cassette 1 paper width detection VR
SVR1
Cassette 2 paper length sensor unit
SEU2
Cassette 1 paper length sensor unit
SEU1
Multifeeder paper width detection VR
SVR3
Multifeeder pick-up clutch
CL6
Multifeeder pick-up solenoid
SL6
Multifeeder paper sensor
PS8
Motor driver PCB
J201
J202
J203
J204
J210
J207
To Pedestal
TM2
J17
To DF
TM3
J15
To Sorter
TM1
J16
PS16
Lens X home position sensor
M6
Lens X motor
PS17
Lens Y home position sensor
M7
Lens Y motor
AE sensor
M2
Scanning motor


Composite power supply PCB (PU1)
Developper Bias
Scanning lamp
Fixing heater
Thermo Switch
Fixing assembly thermistor TH1
Cassette 2 pick-up release solenoid
Cassette 2 lifter sensor
Cassette 2 paper sensor
Vertical path roller 2 paper sensor
Vertical path roller 2 clutch
Cassette 2 pick-up clutch
Cassette 1 pick-up release solenoid
Cassette 1 pick-up clutch
Vertical path roller 1 clutch
right door open sensor
Cassette 1 paper sensor
Cassette 1 lifter sensor
Vertical path roller 1 paper sensor
Multifeeder paper sensor
Separation sensor
Transfer roller release solenoid
Feeding fan
Developing assembly toner sensor
Exhaust fan
Delivery vertical path paper sensor (option)
Blank shutter solenoid
Pre-exposure lamp
Blank shutter (front) motor
Scanner home position sensor
Blank shutter (rear) home position sensor
Blank shutter (front) home position sensor
Blank shutter (rear) motor
Varistor for registation guide
Varistor for Transfer guide
Control Panel
LCD CRT
DC-AC
CCV

# D. DC CONTROLLER CIRCUIT DIAGRAM

## DC CONTROLLER (A501)



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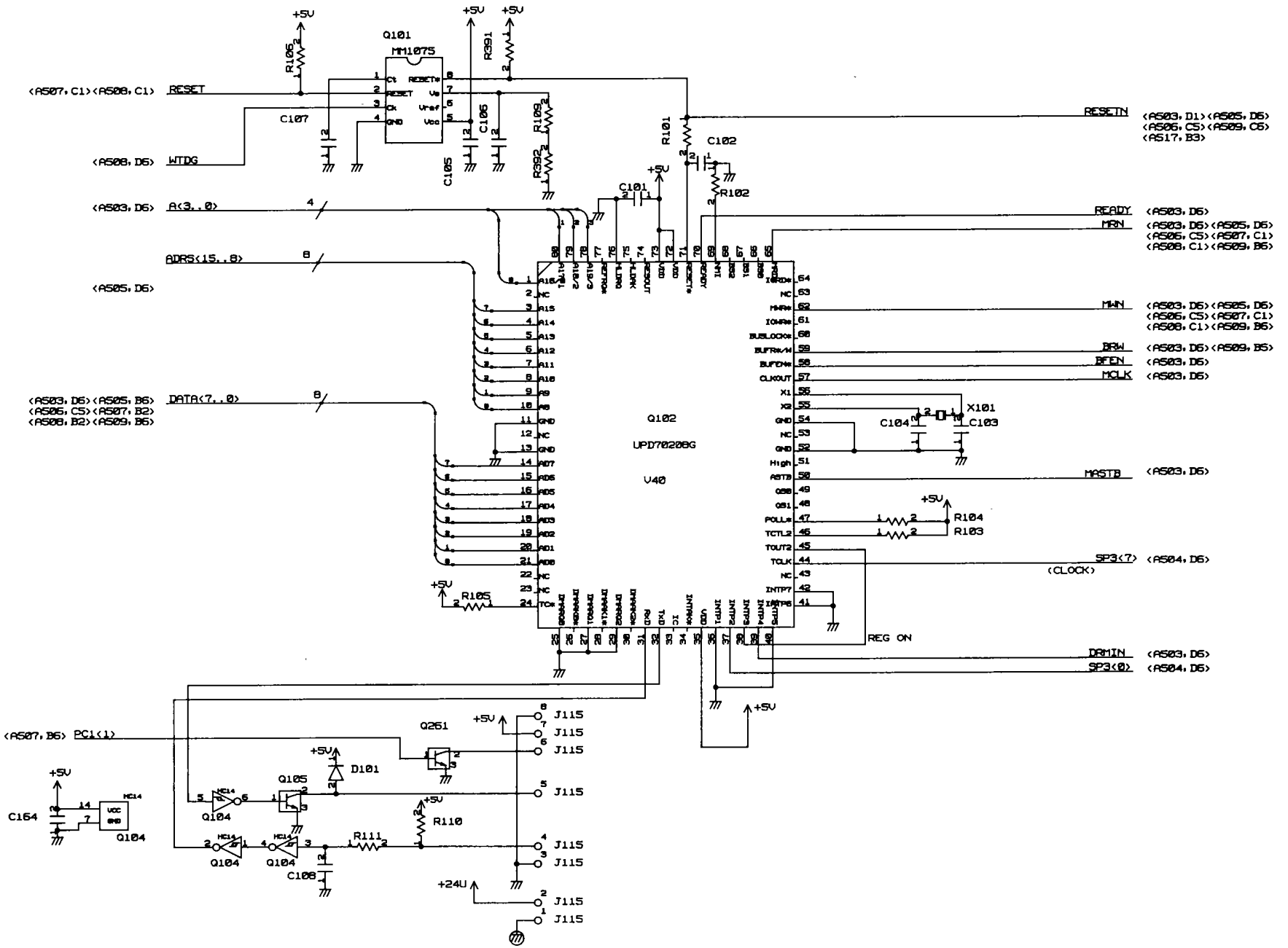




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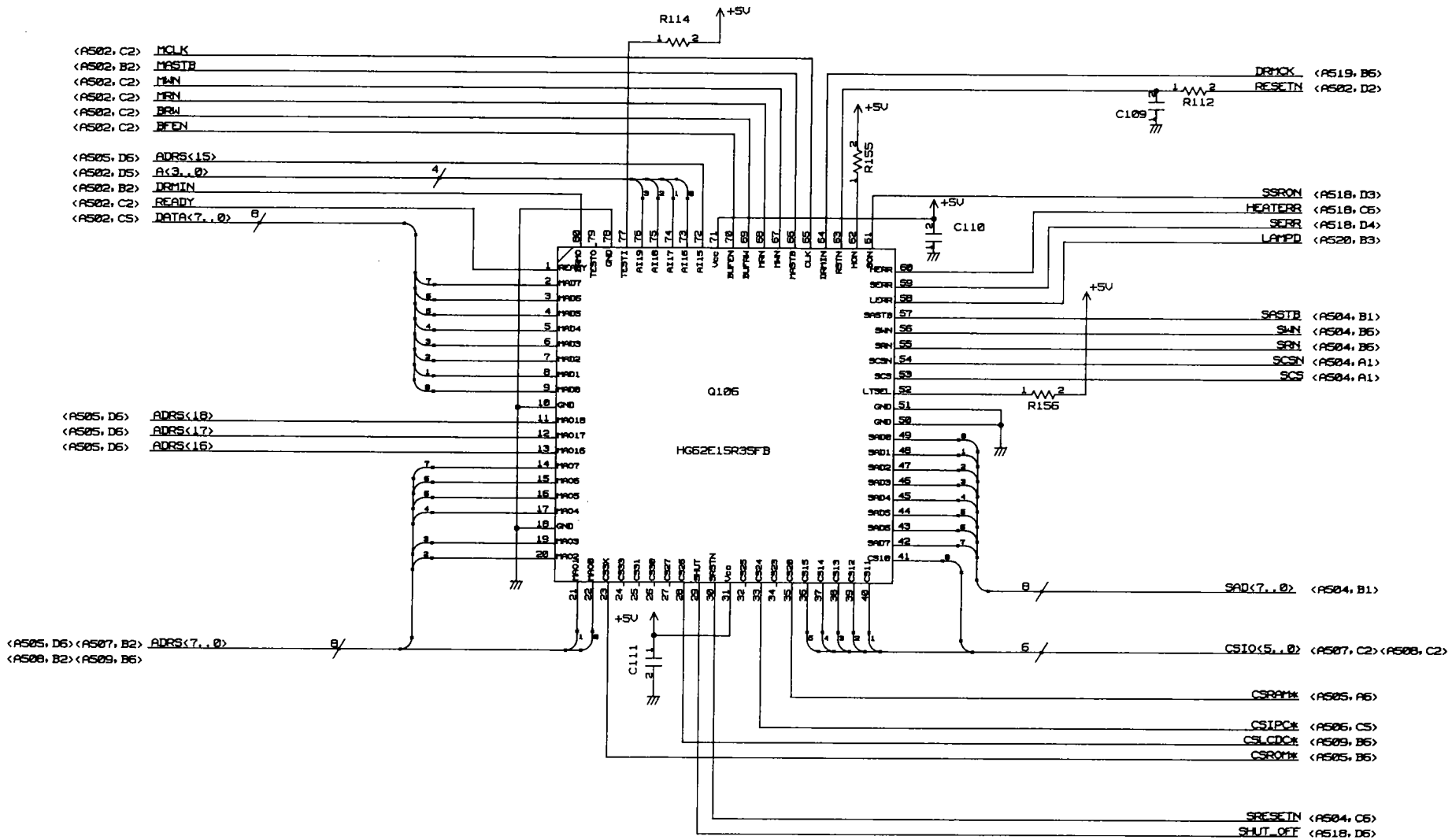


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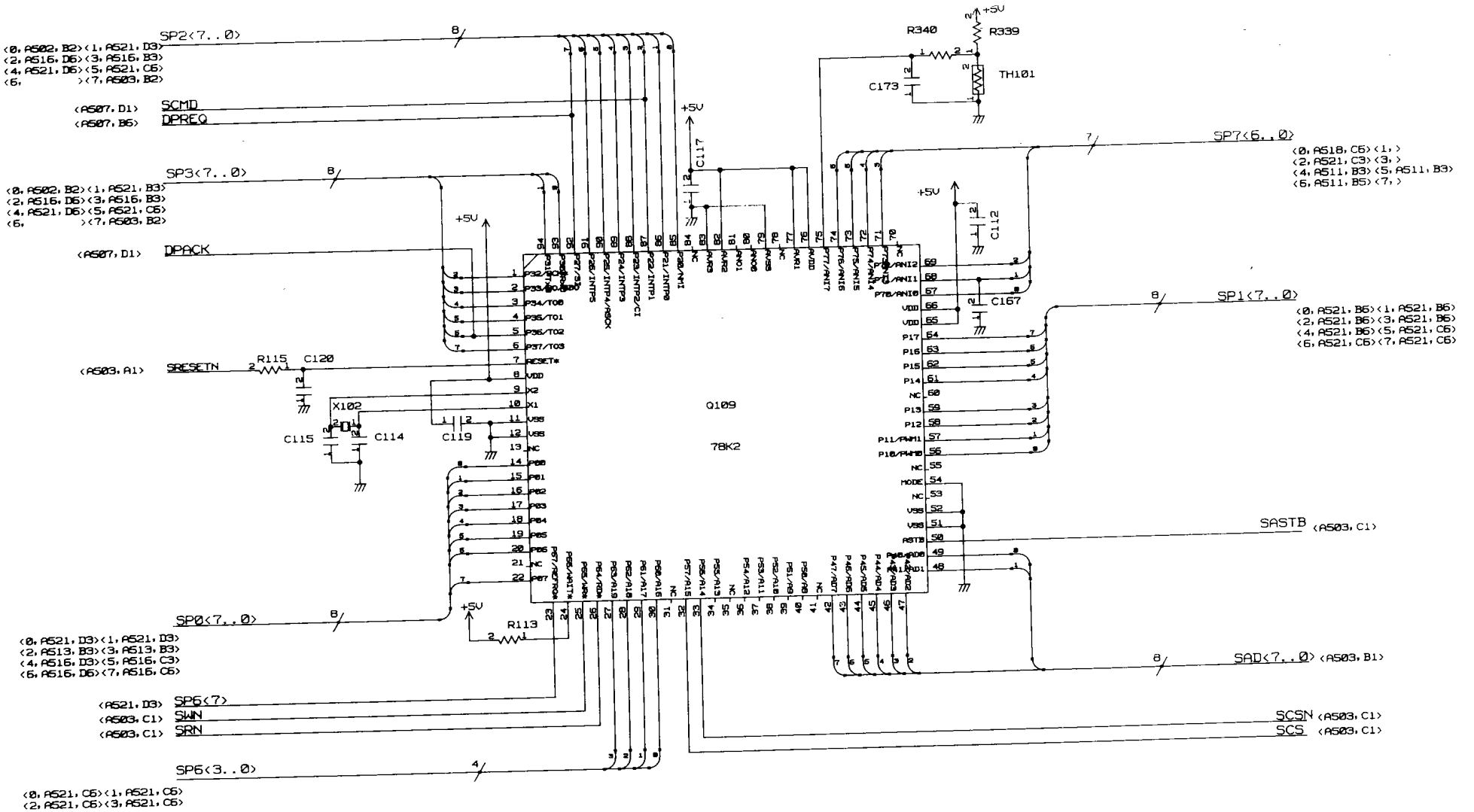


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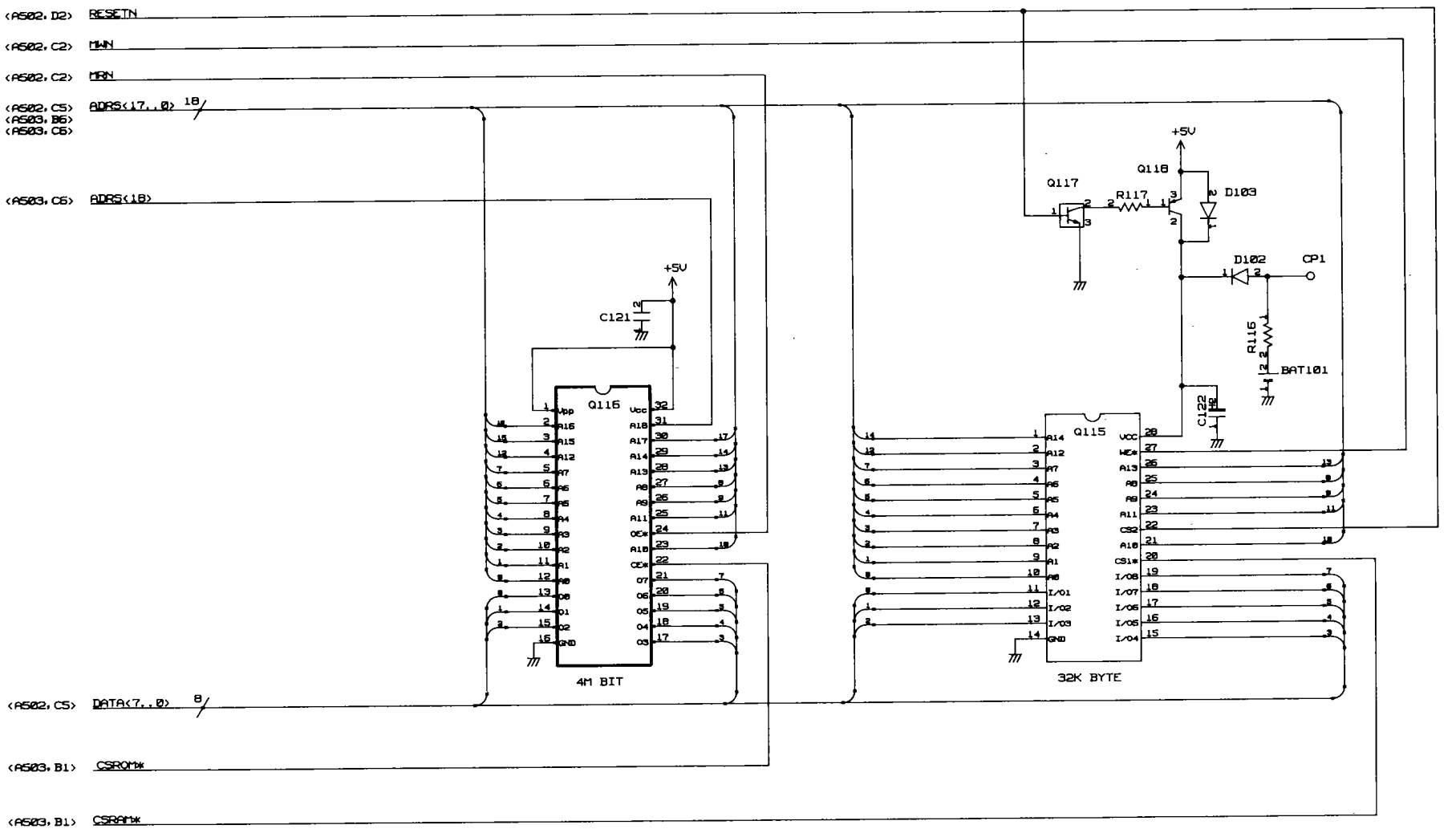




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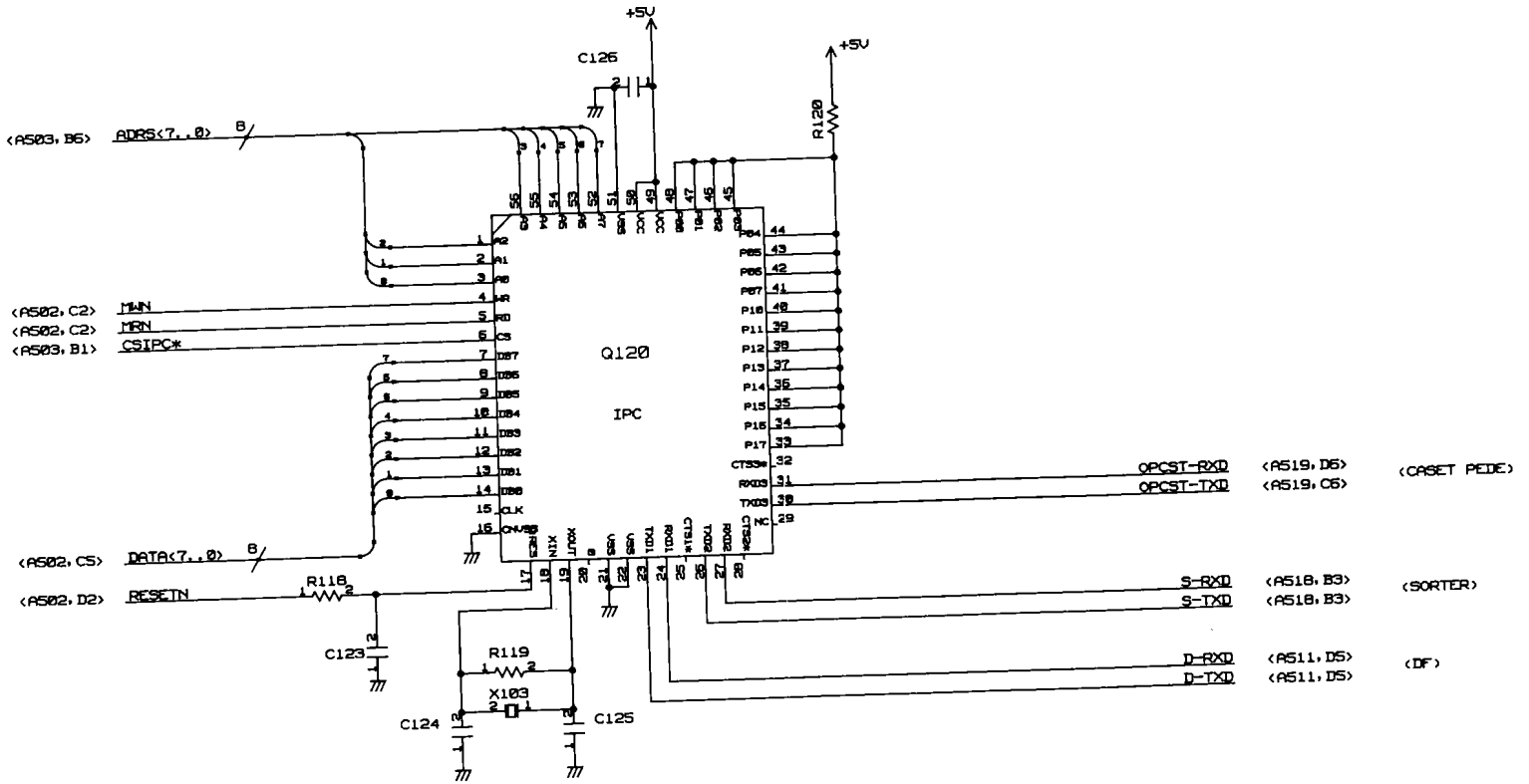


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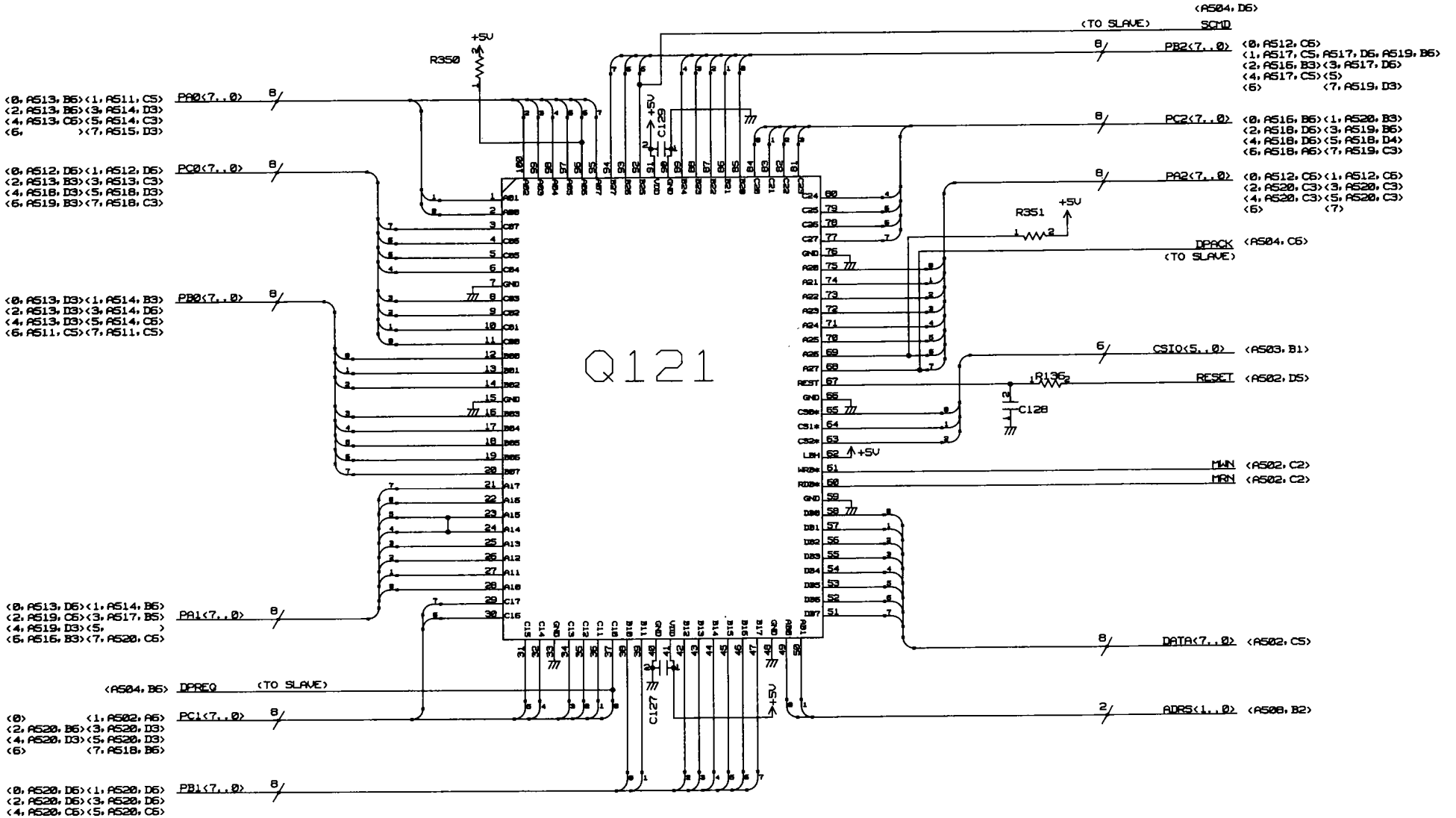
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R350
+5V
C129
R351
R135
C128
C127
PA0<7..0>
PC0<7..0>
PB0<7..0>
PA1<7..0>
PC1<7..0>
PB1<7..0>
DPREQ
(TO SLAVE)
SCMD
PB2<7..0>
PC2<7..0>
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RESET
MWN
MRN
DATA<7..0>
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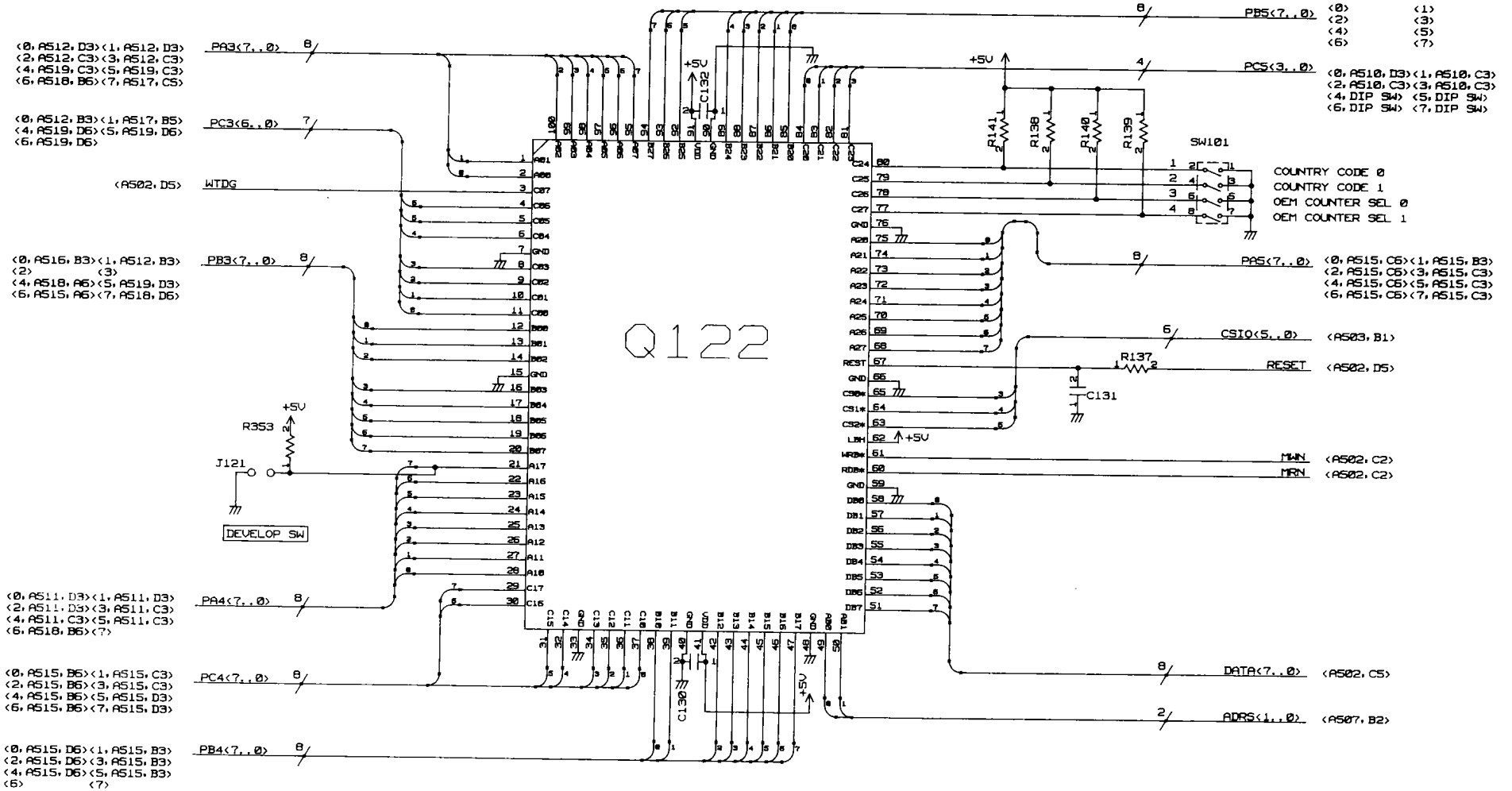
(A502, D5)
(A502, C2)
(A502, C5)
(A500, B2)



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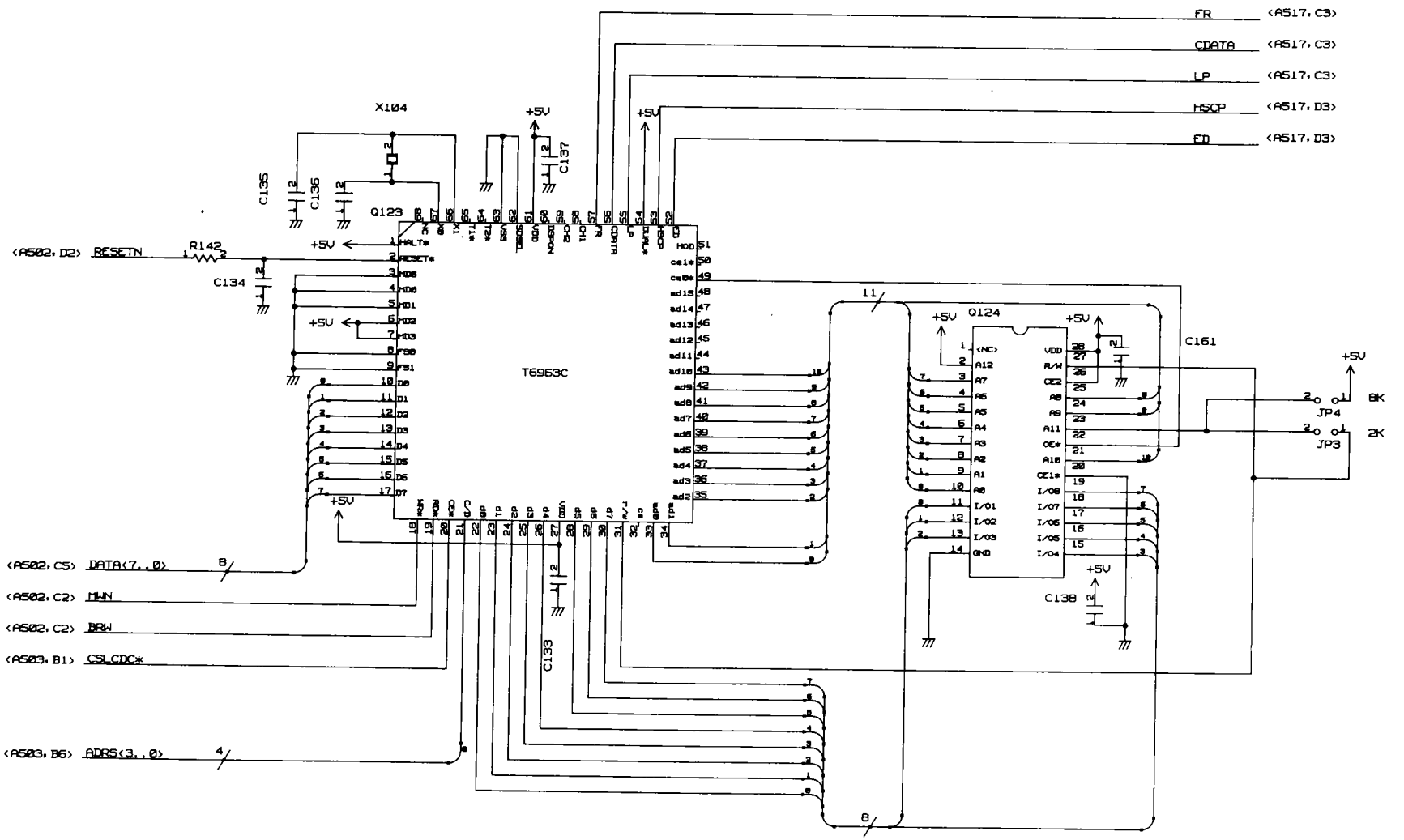


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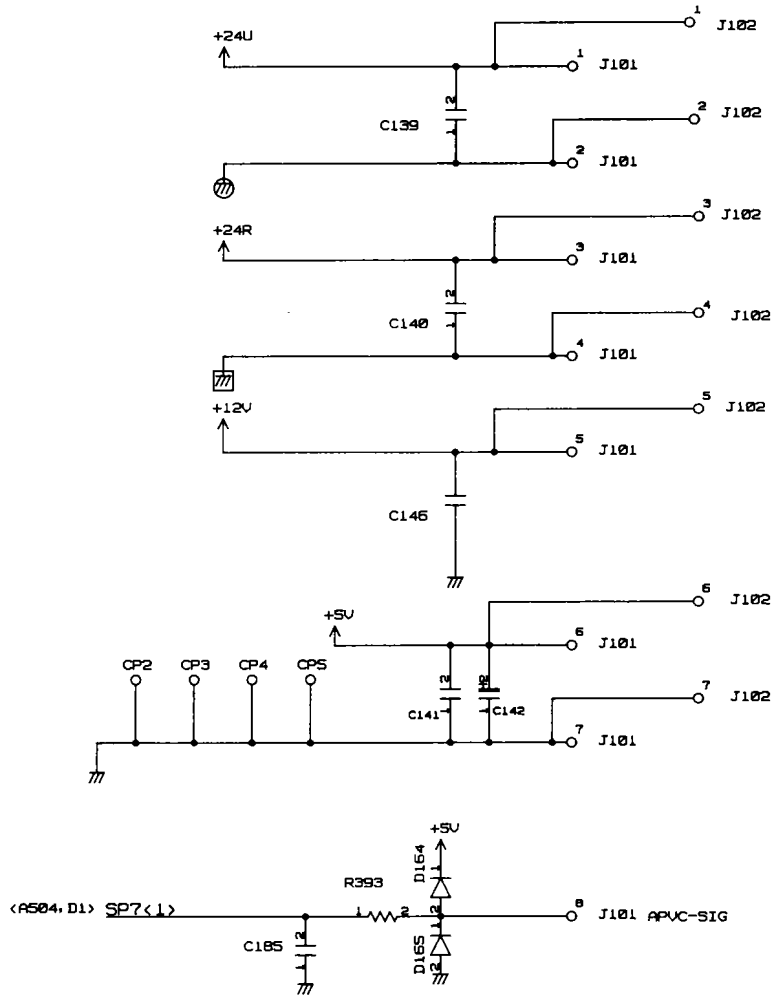


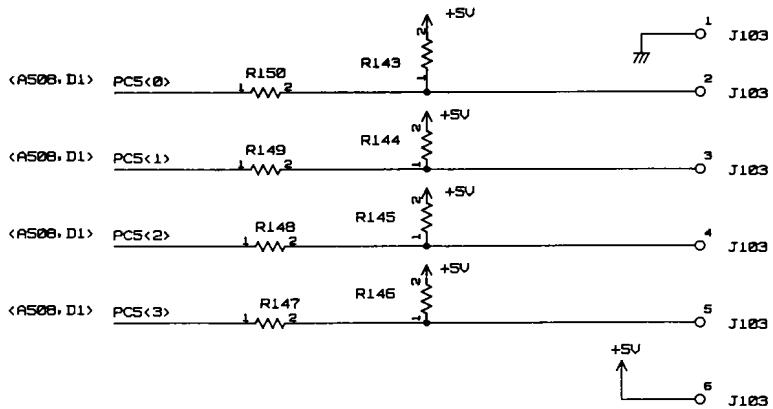




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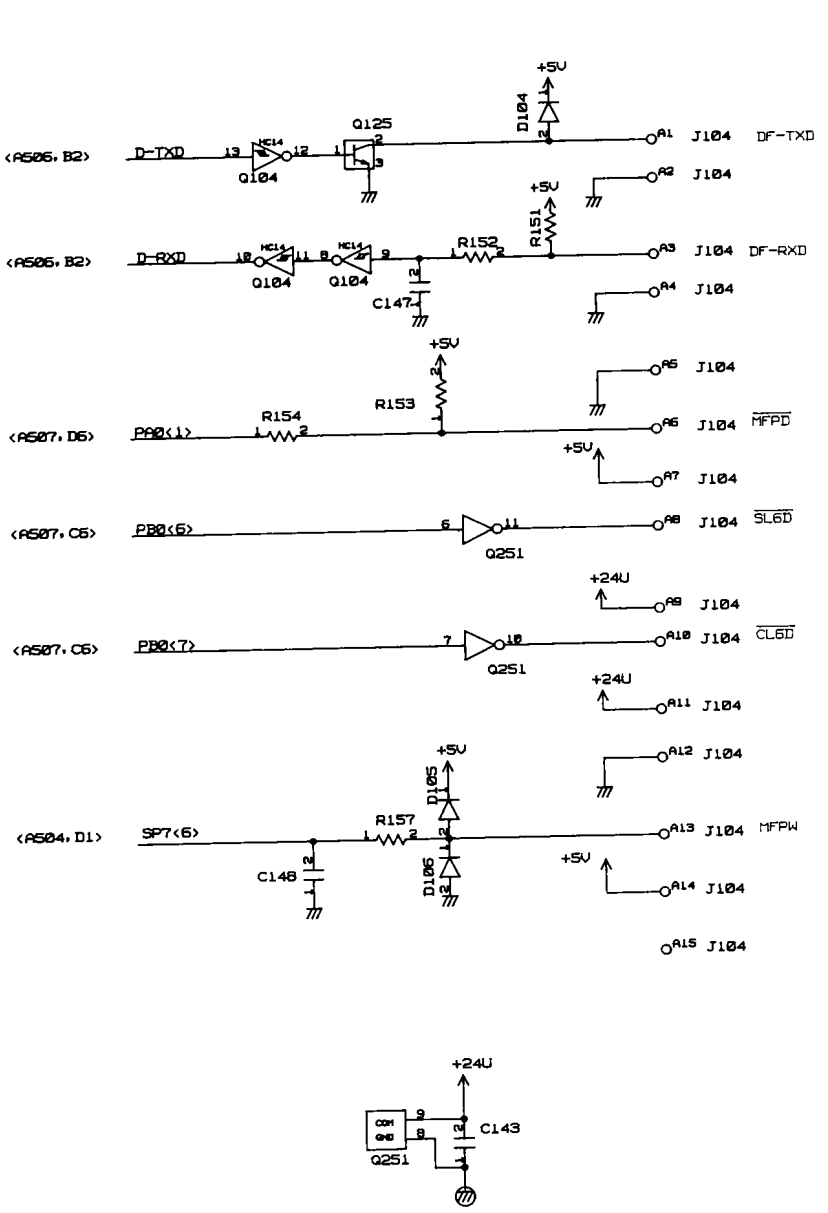


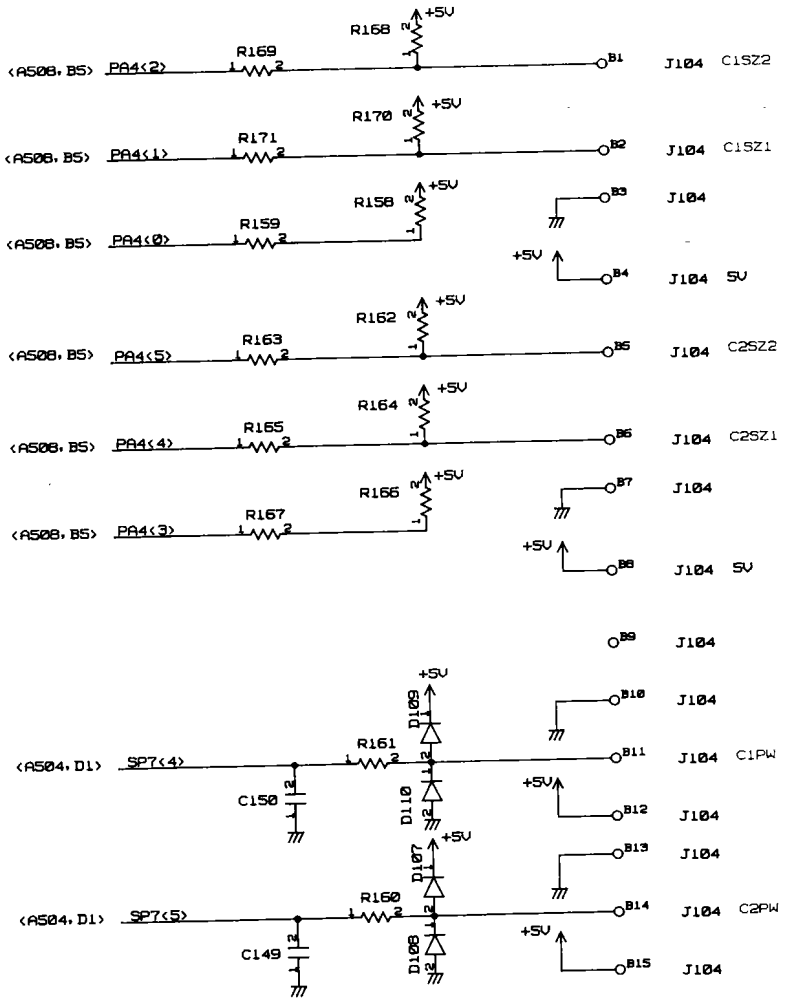




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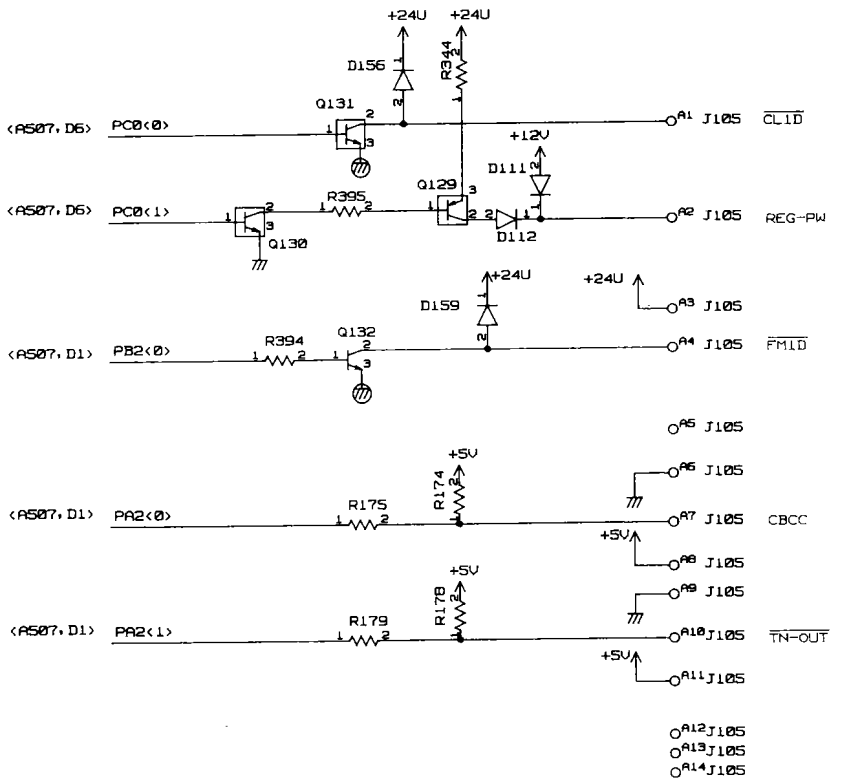


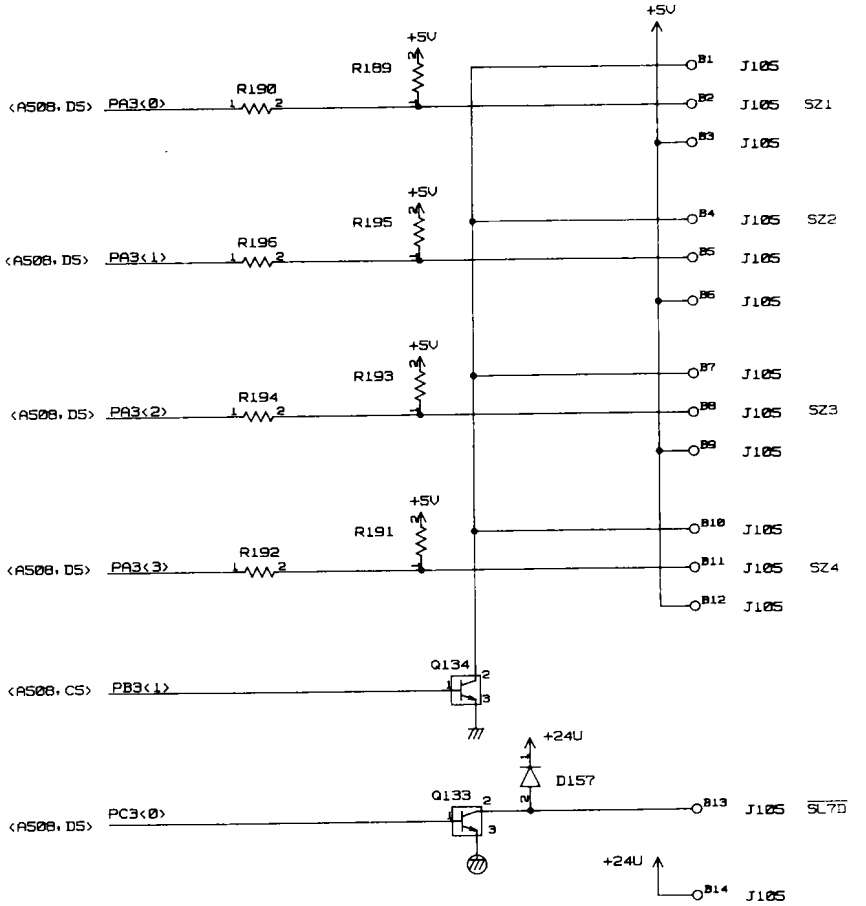




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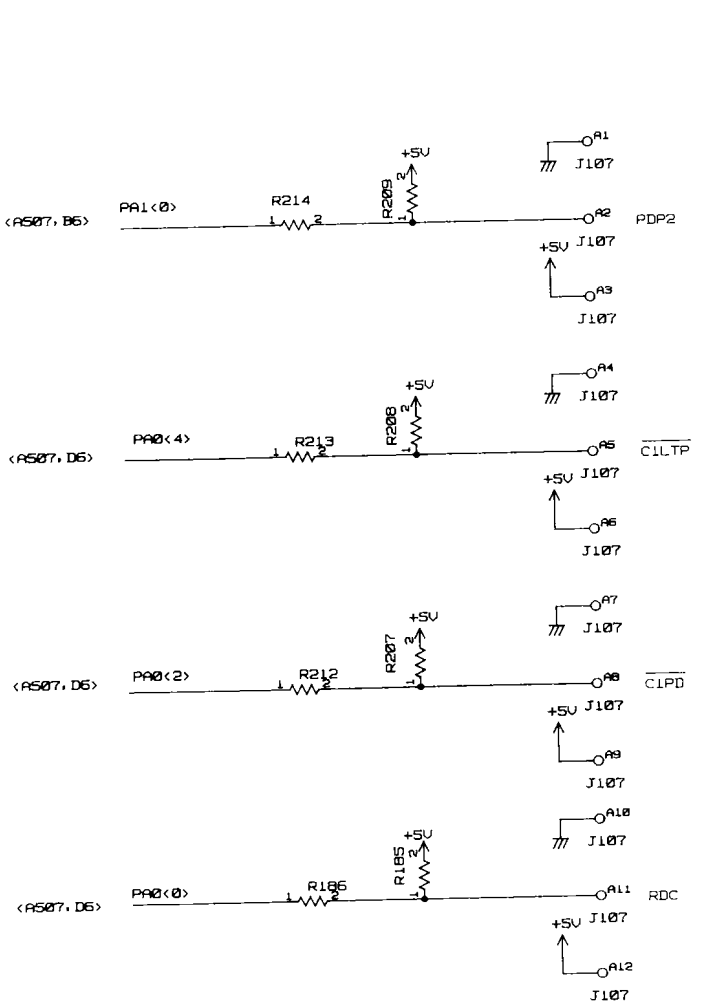


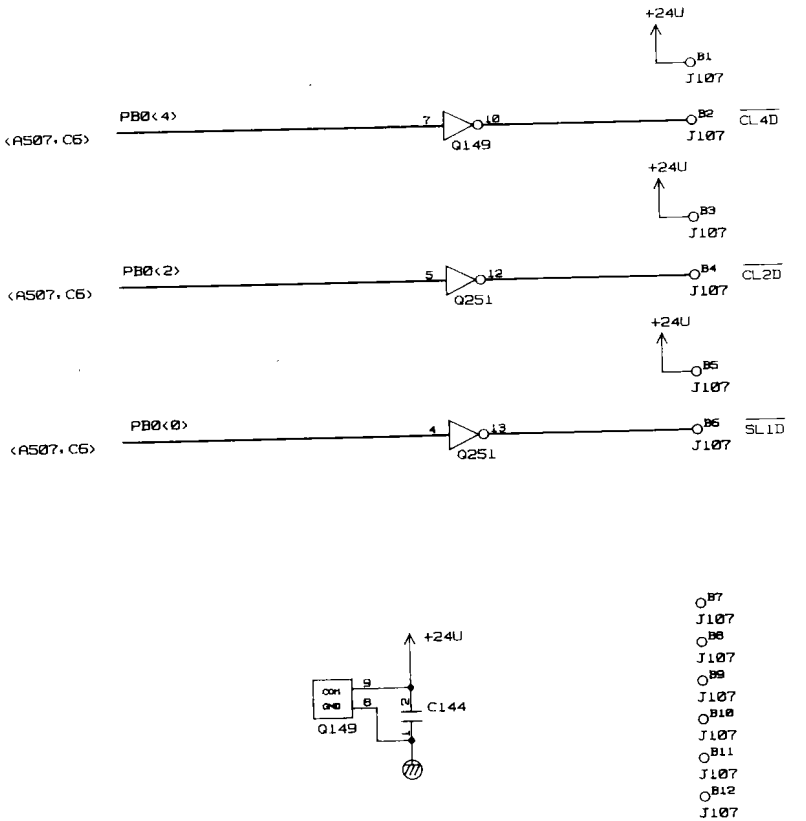




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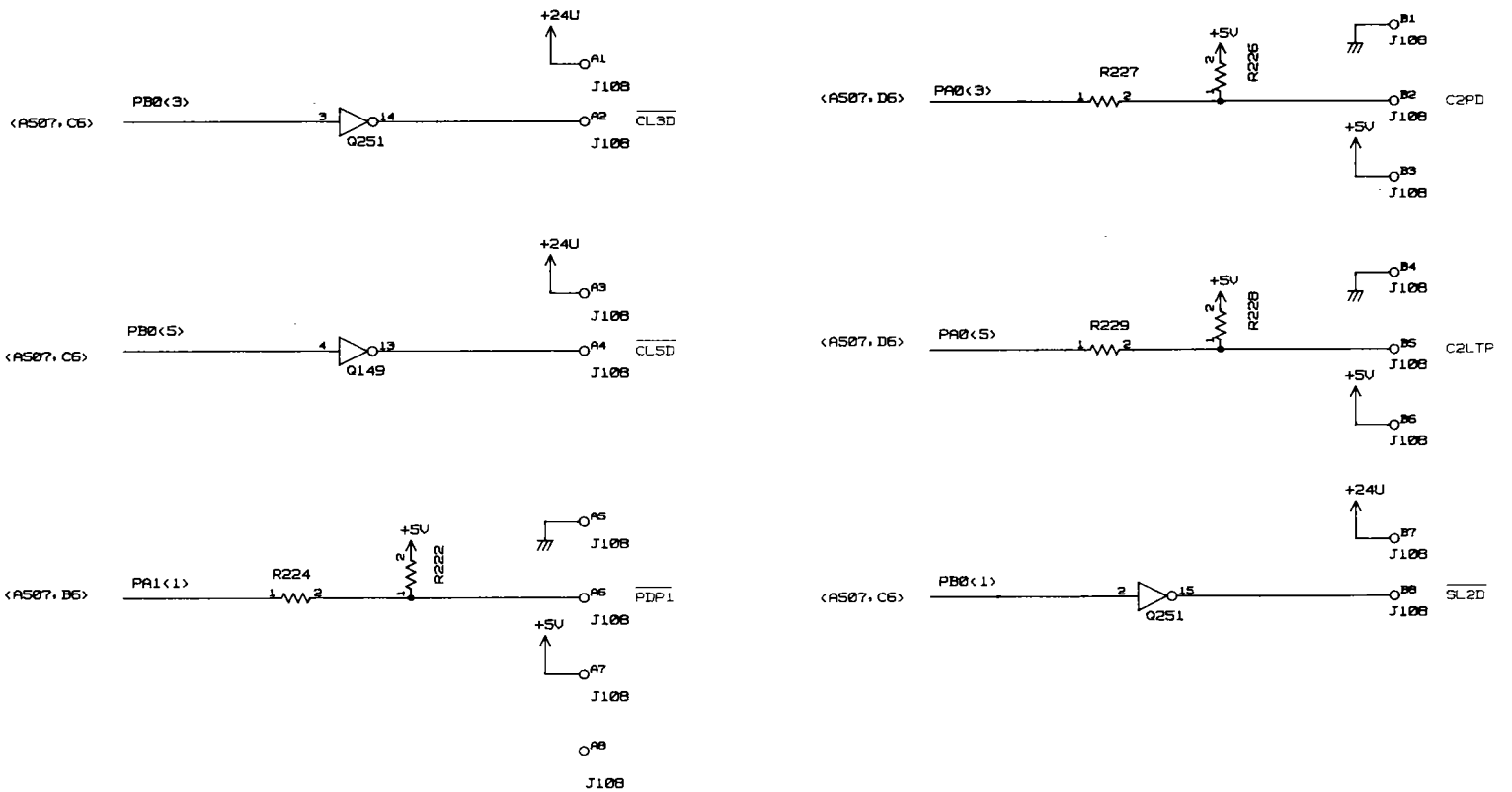




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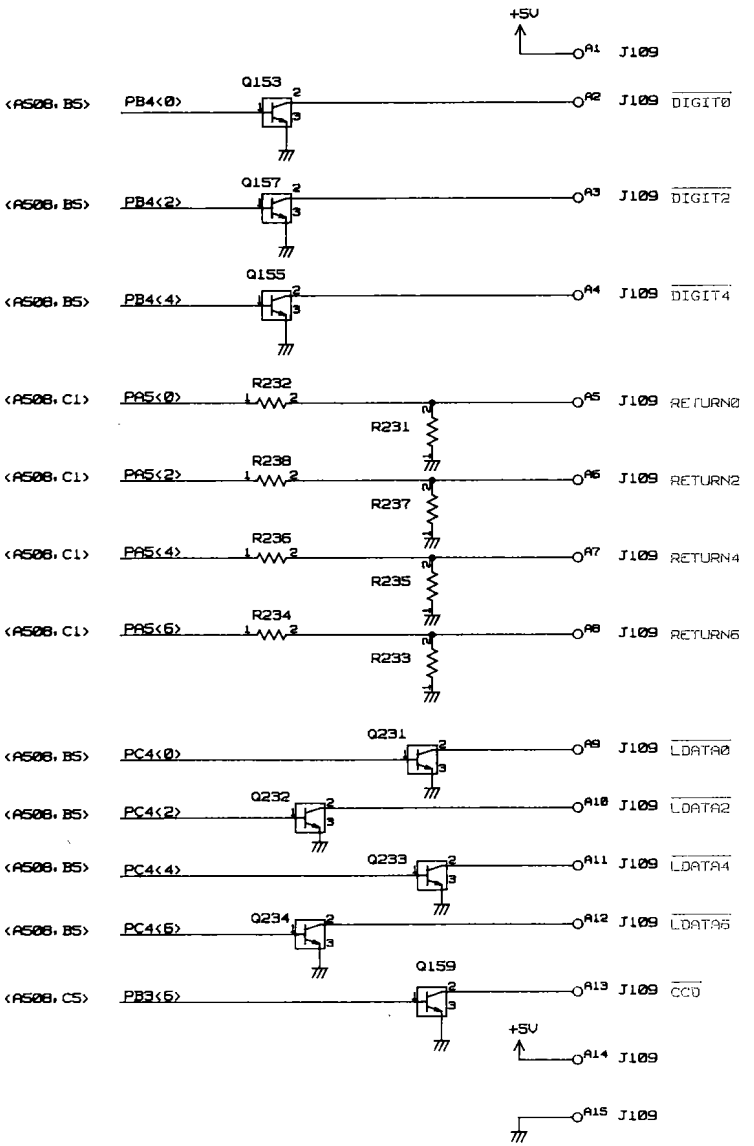


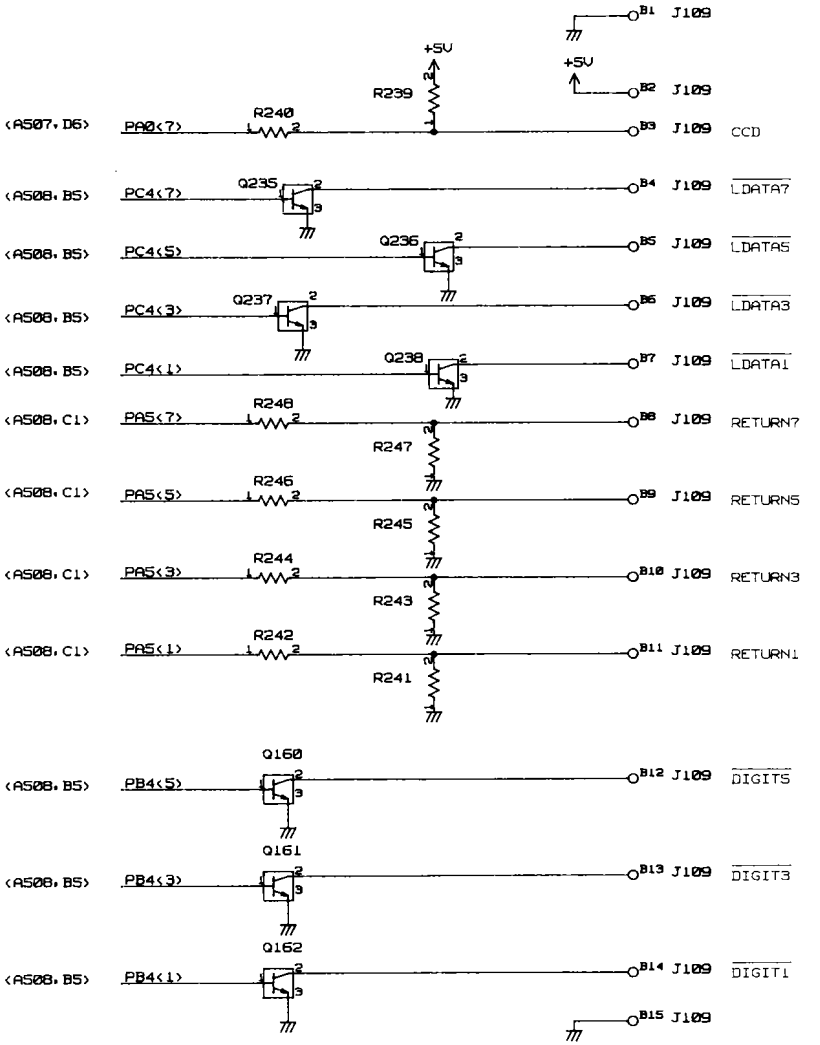


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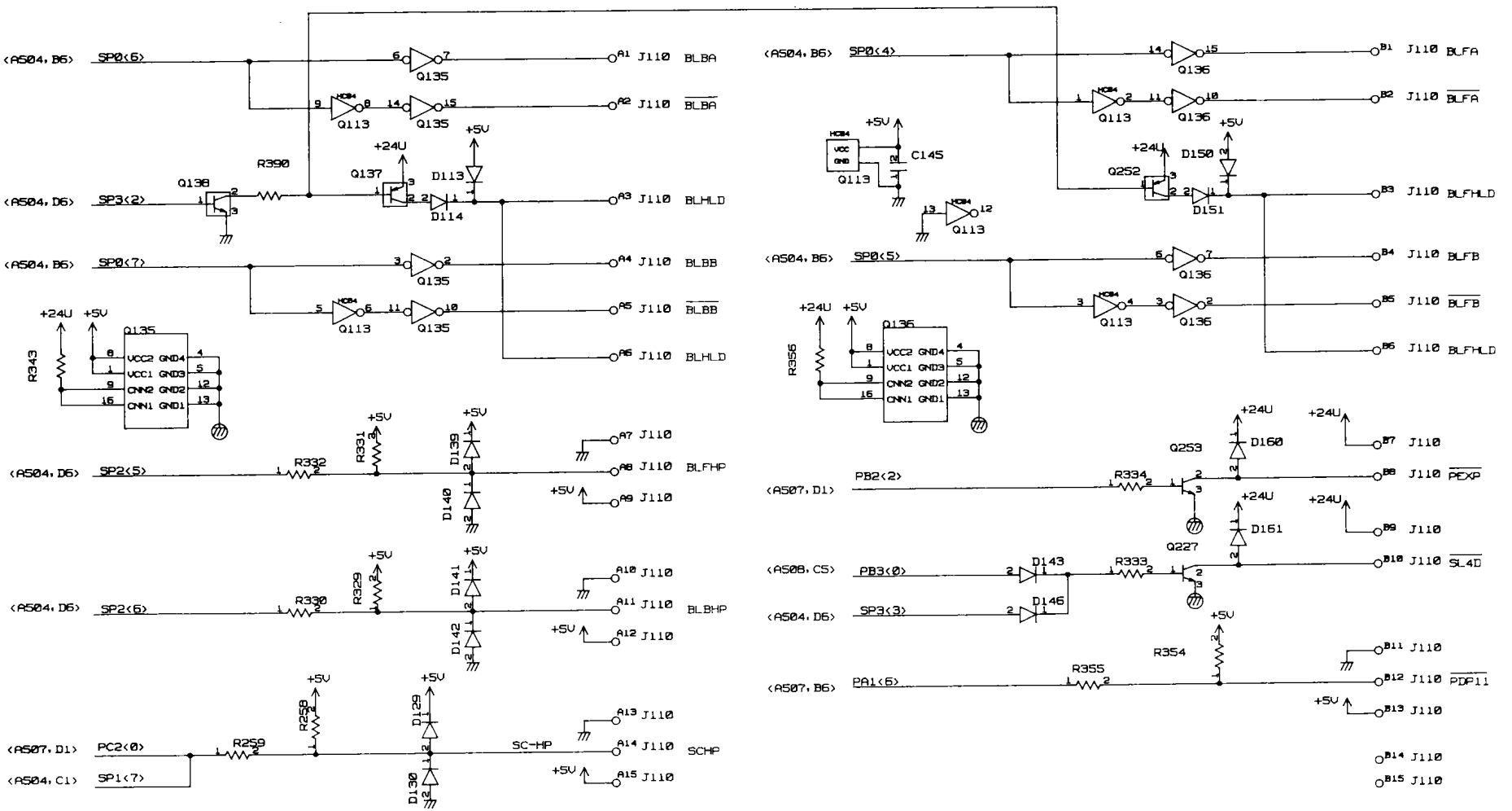




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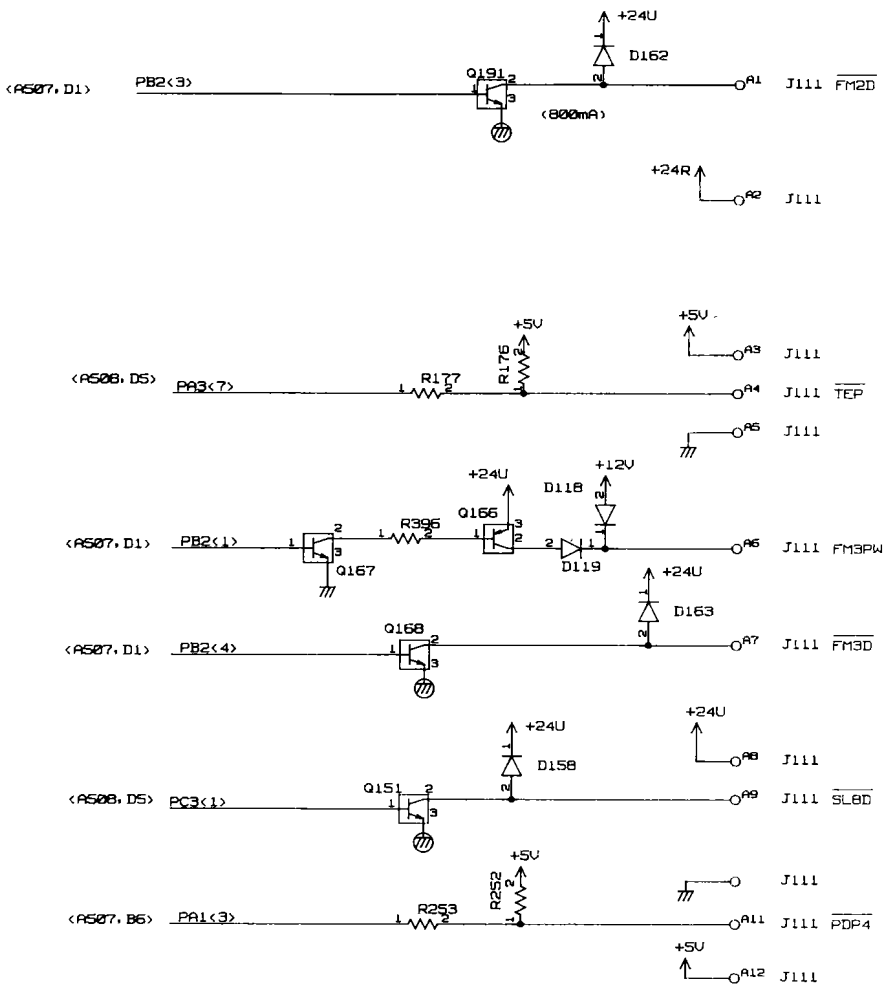


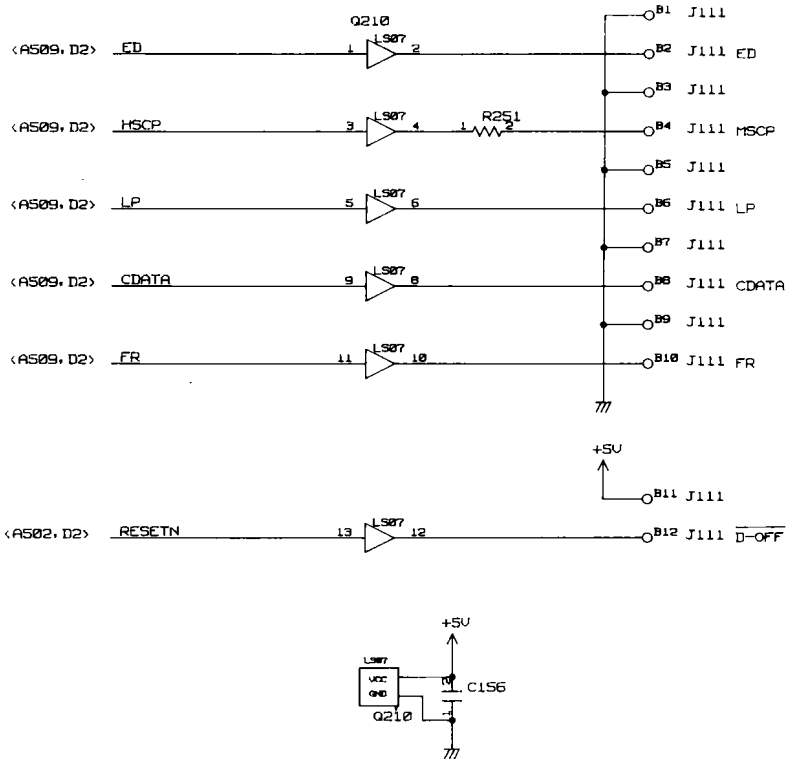


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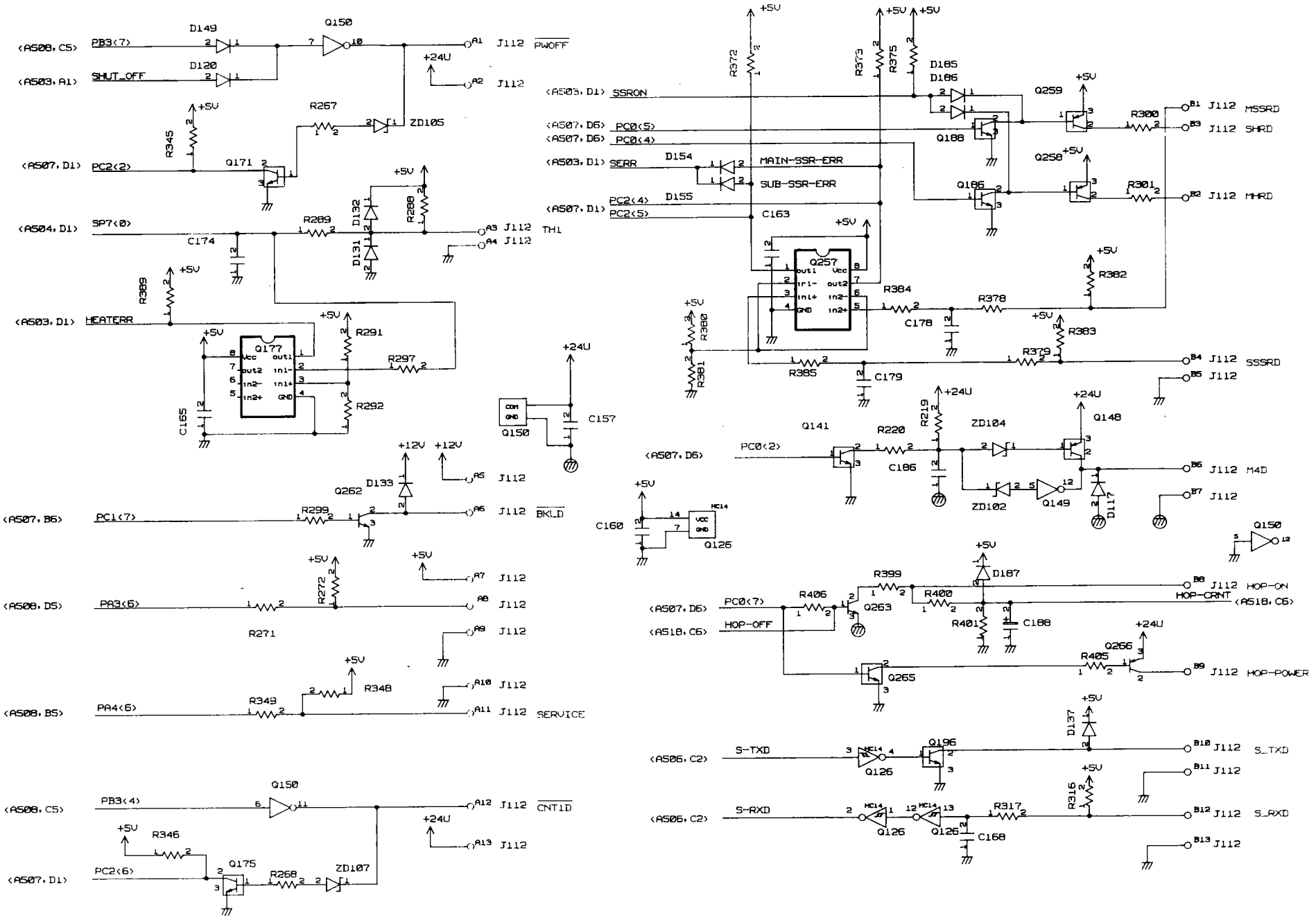




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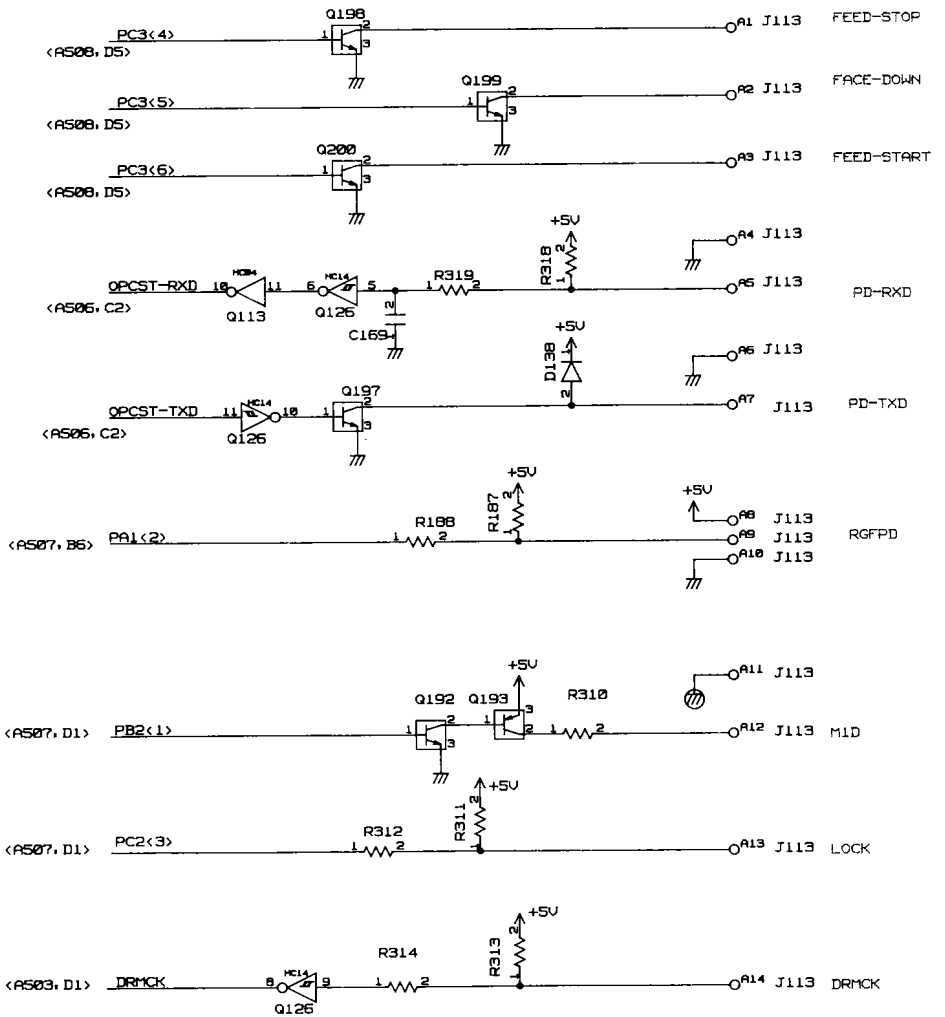


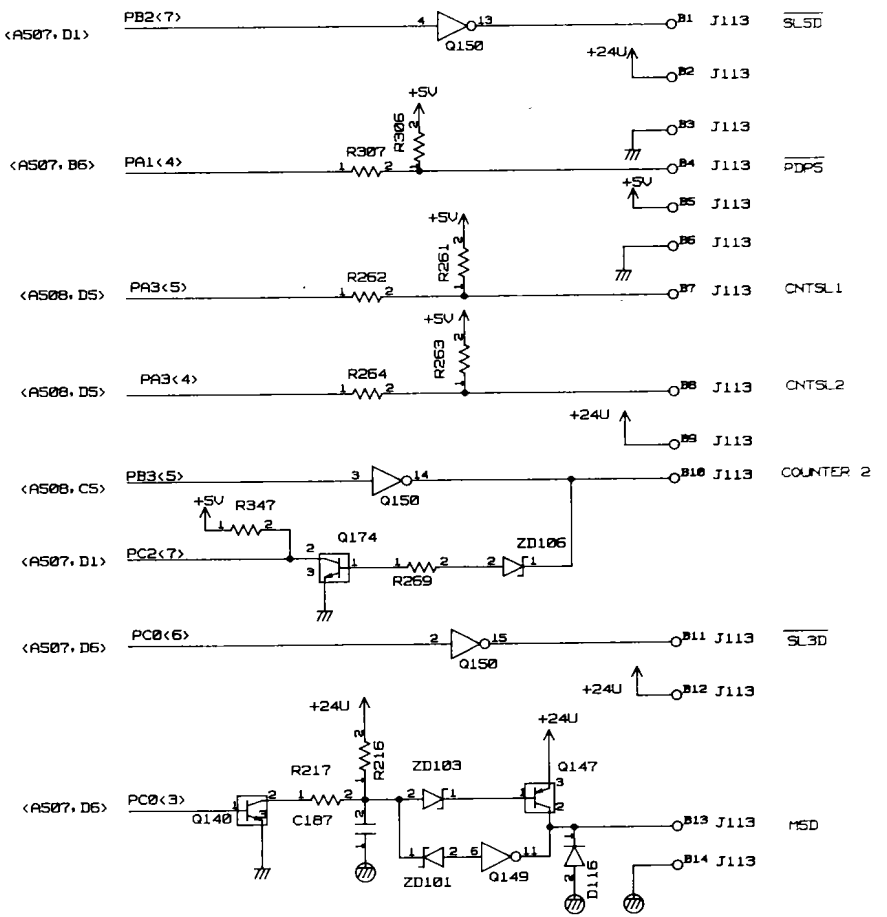


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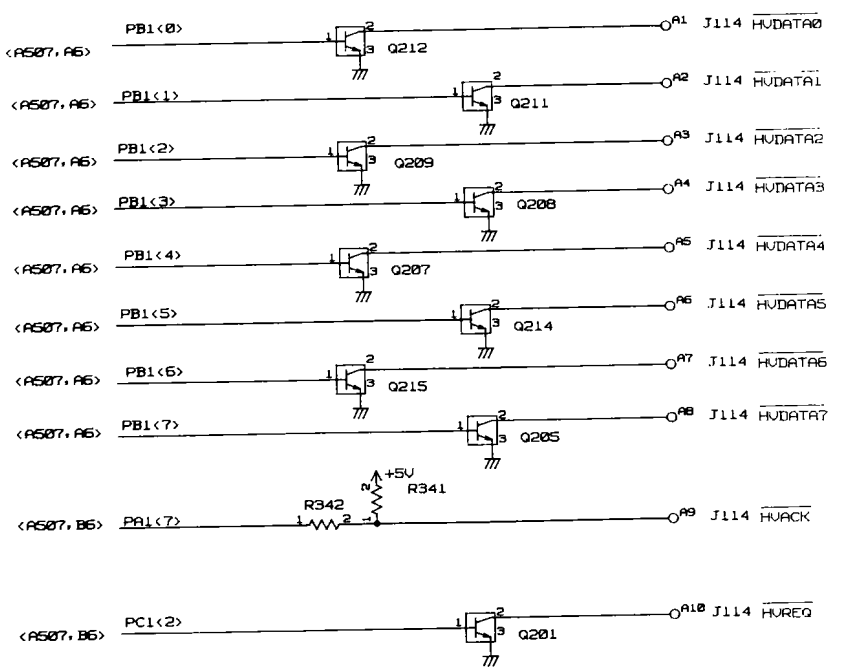


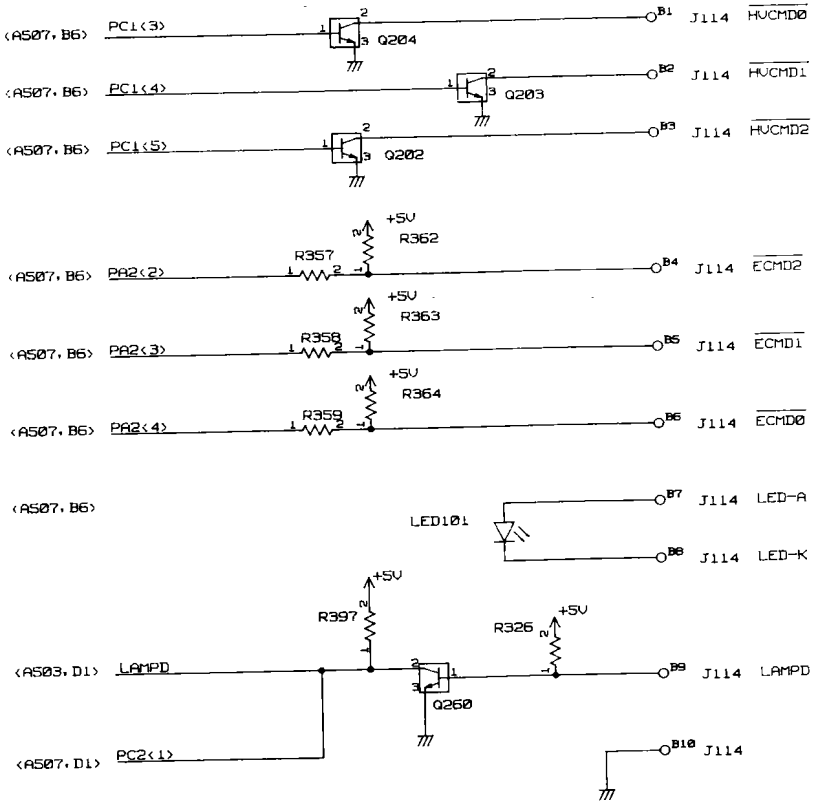


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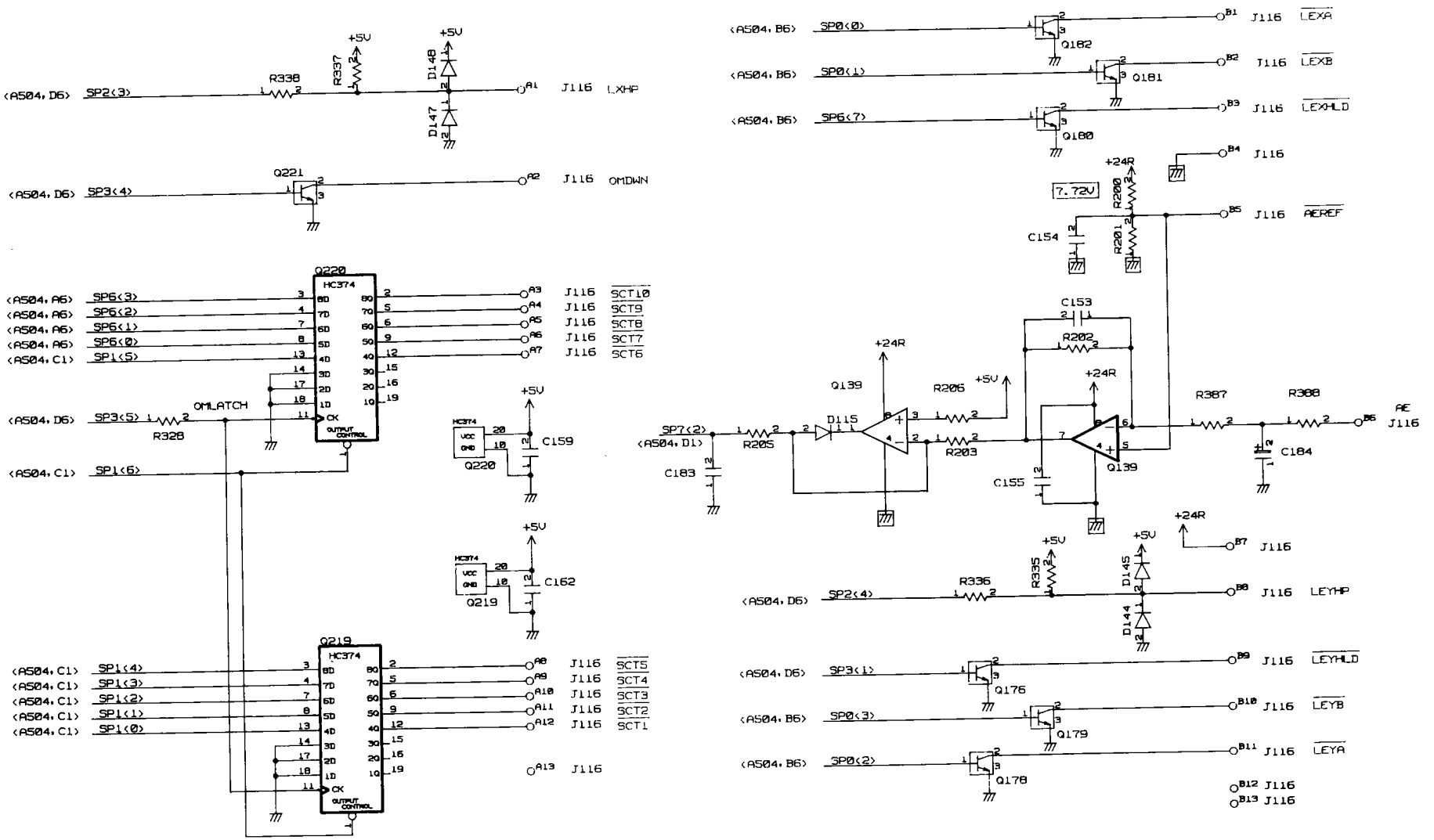




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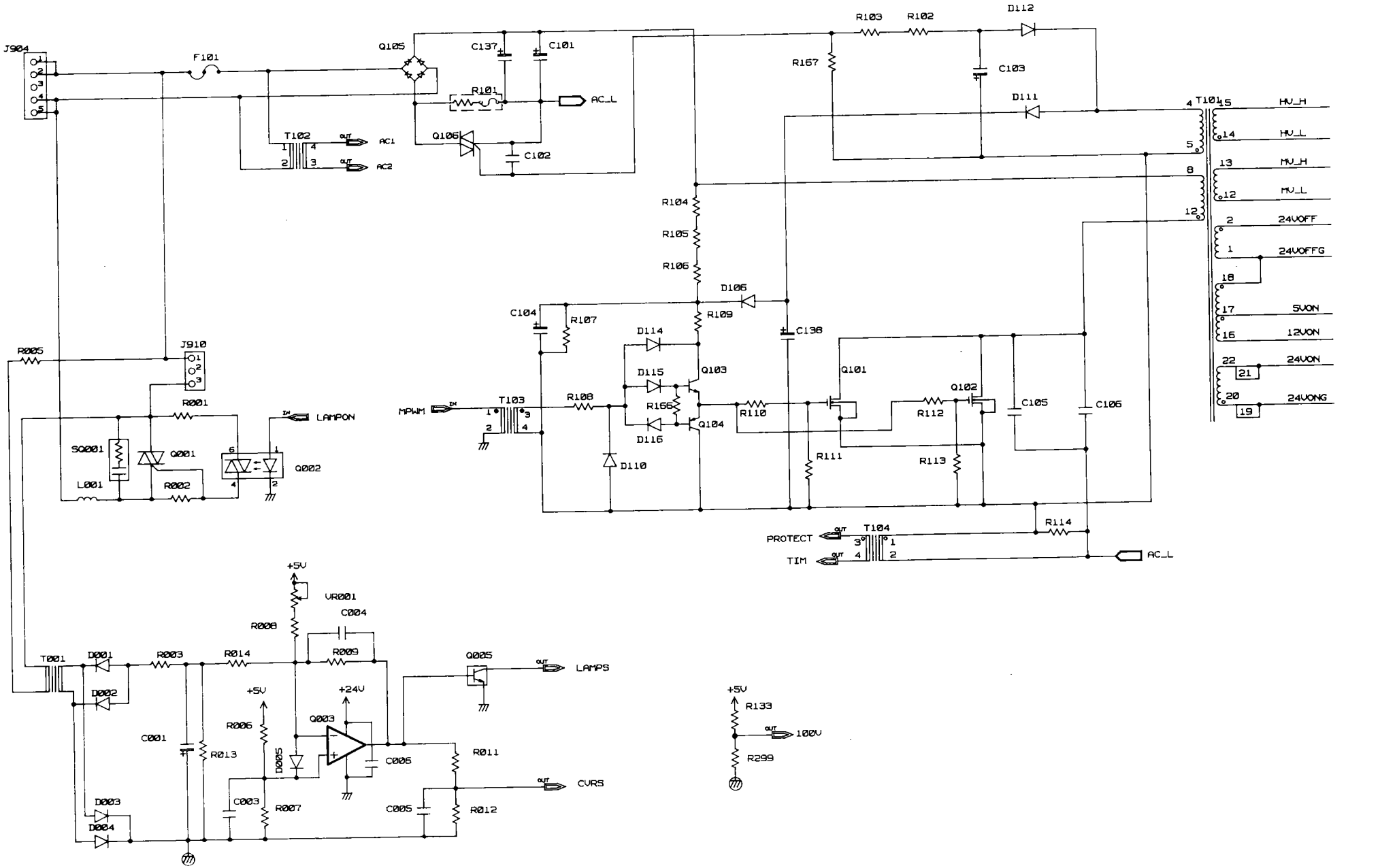
# E. COMPOSITE POWER SUPPLY CIRCUIT DIAGRAM

## COMPOSITE POWER SUPPLY (1/7)



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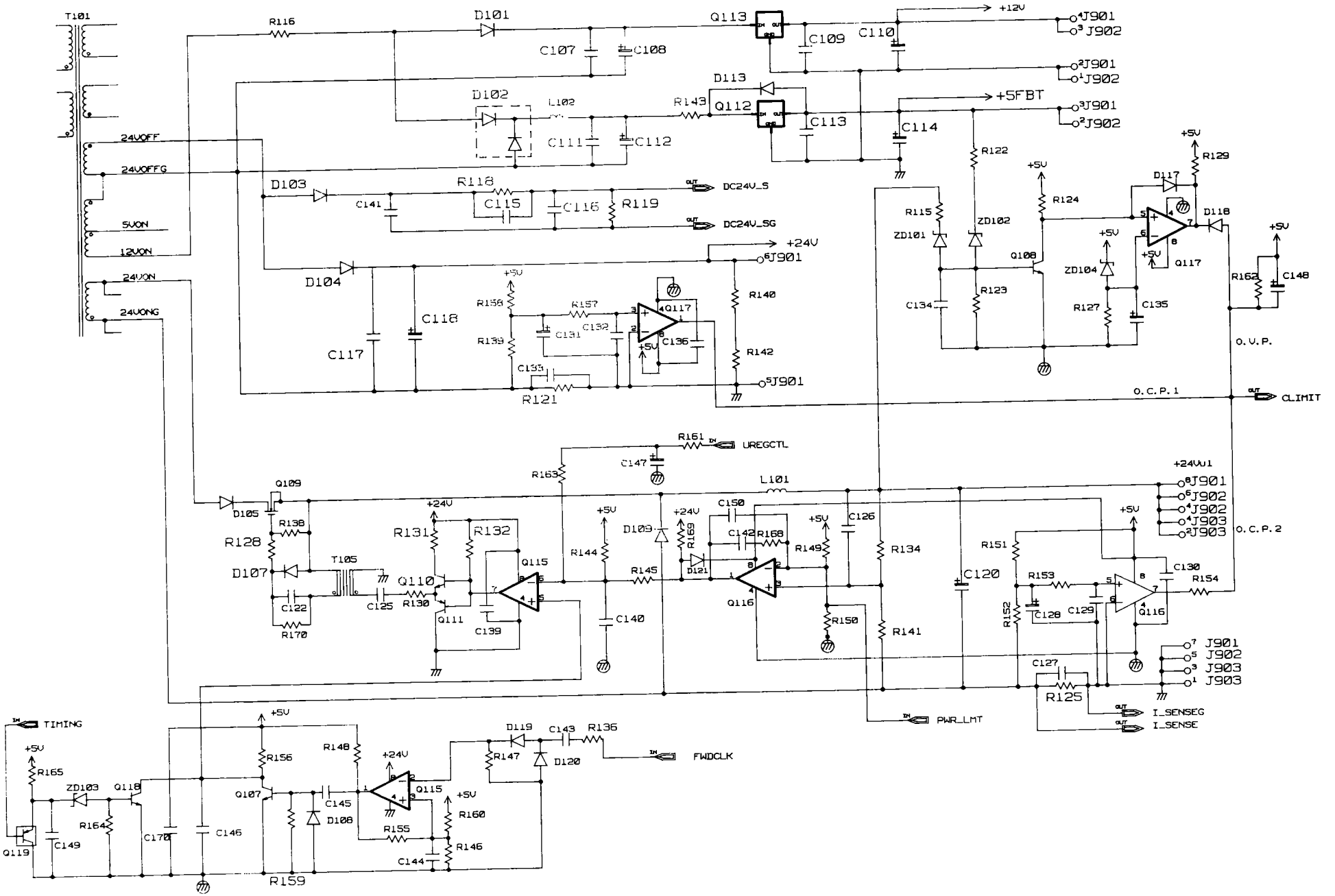




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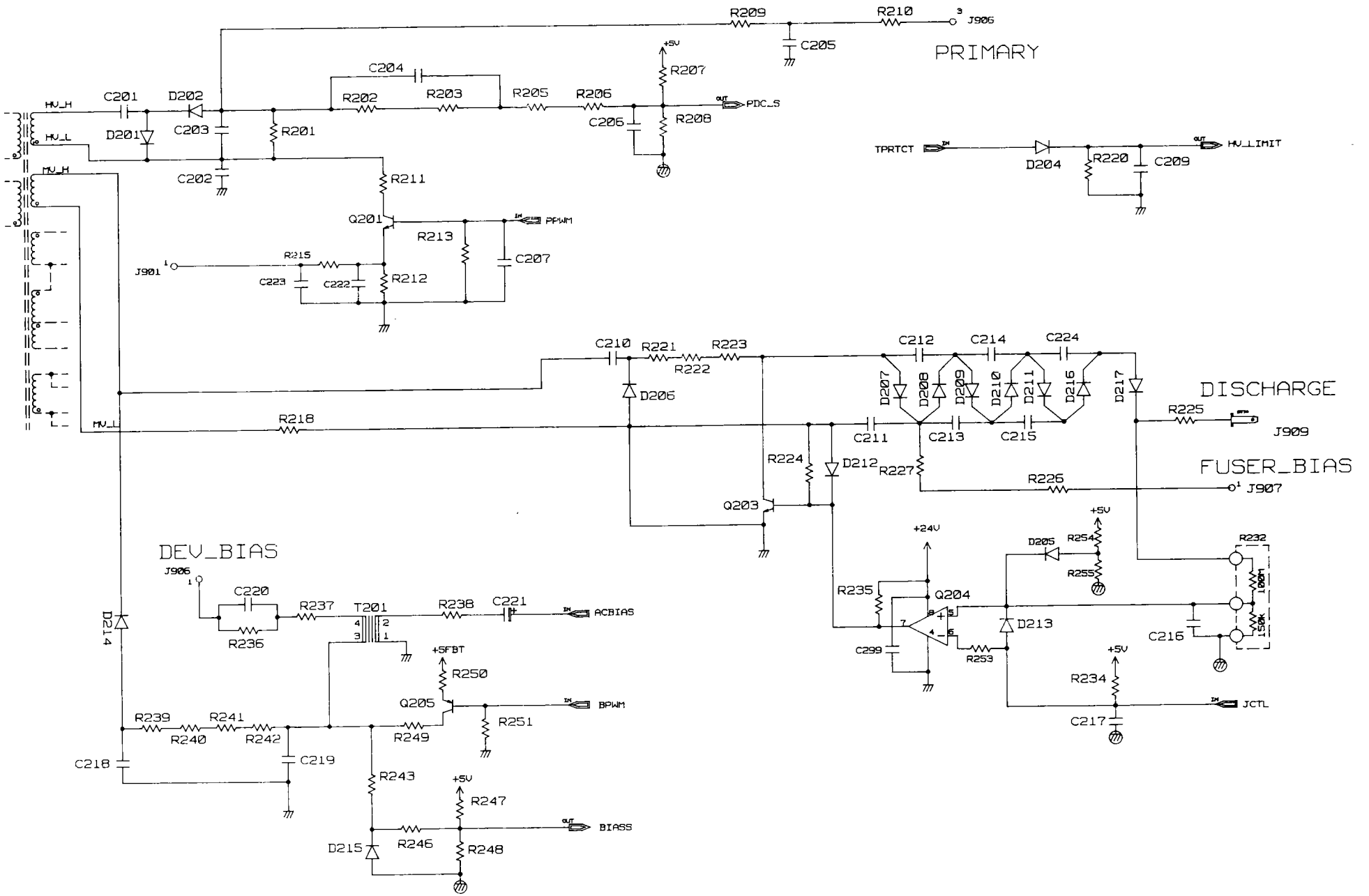
## COMPOSITE POWER SUPPLY (3/7)



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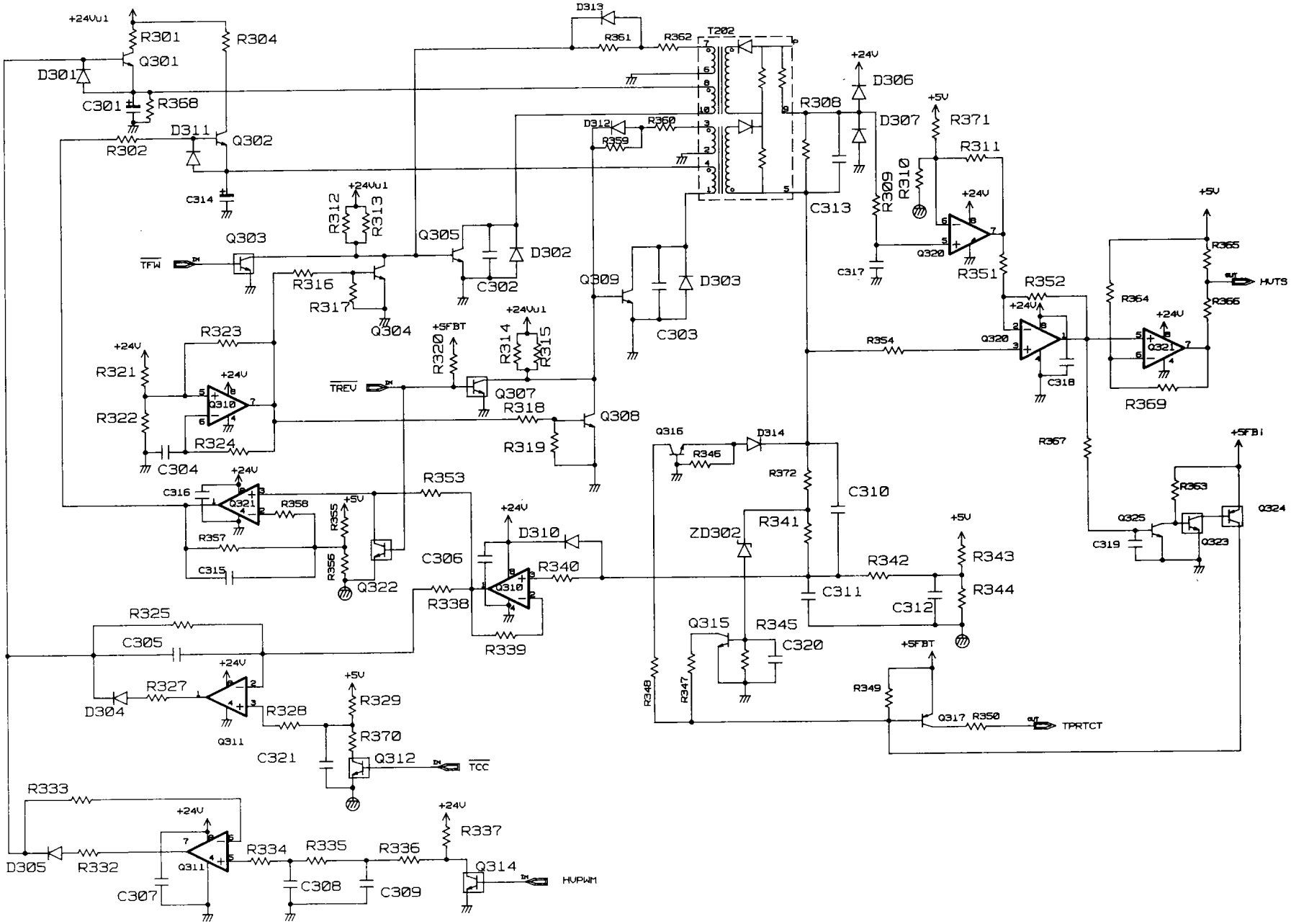




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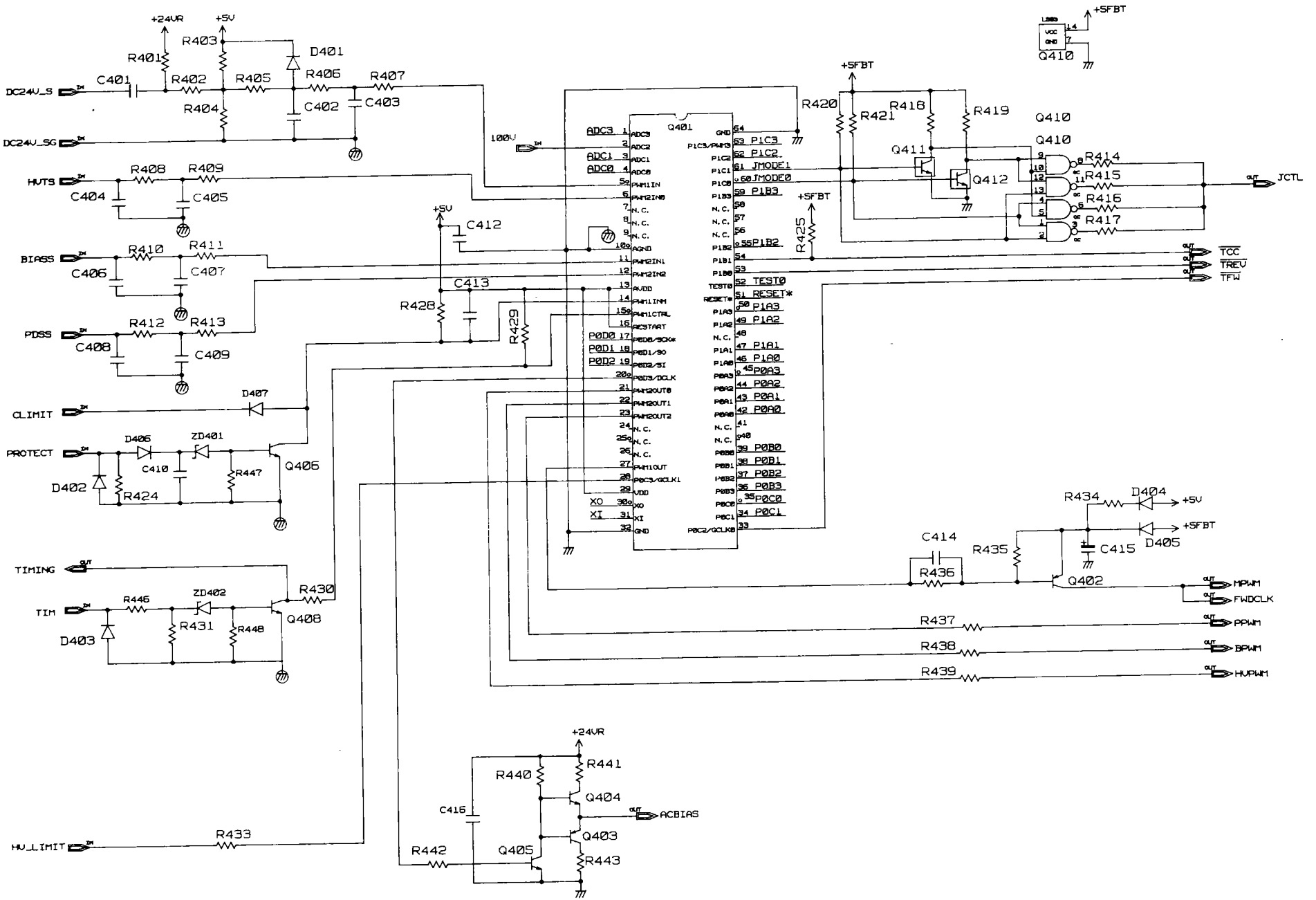
## COMPOSITE POWER SUPPLY (5/7)



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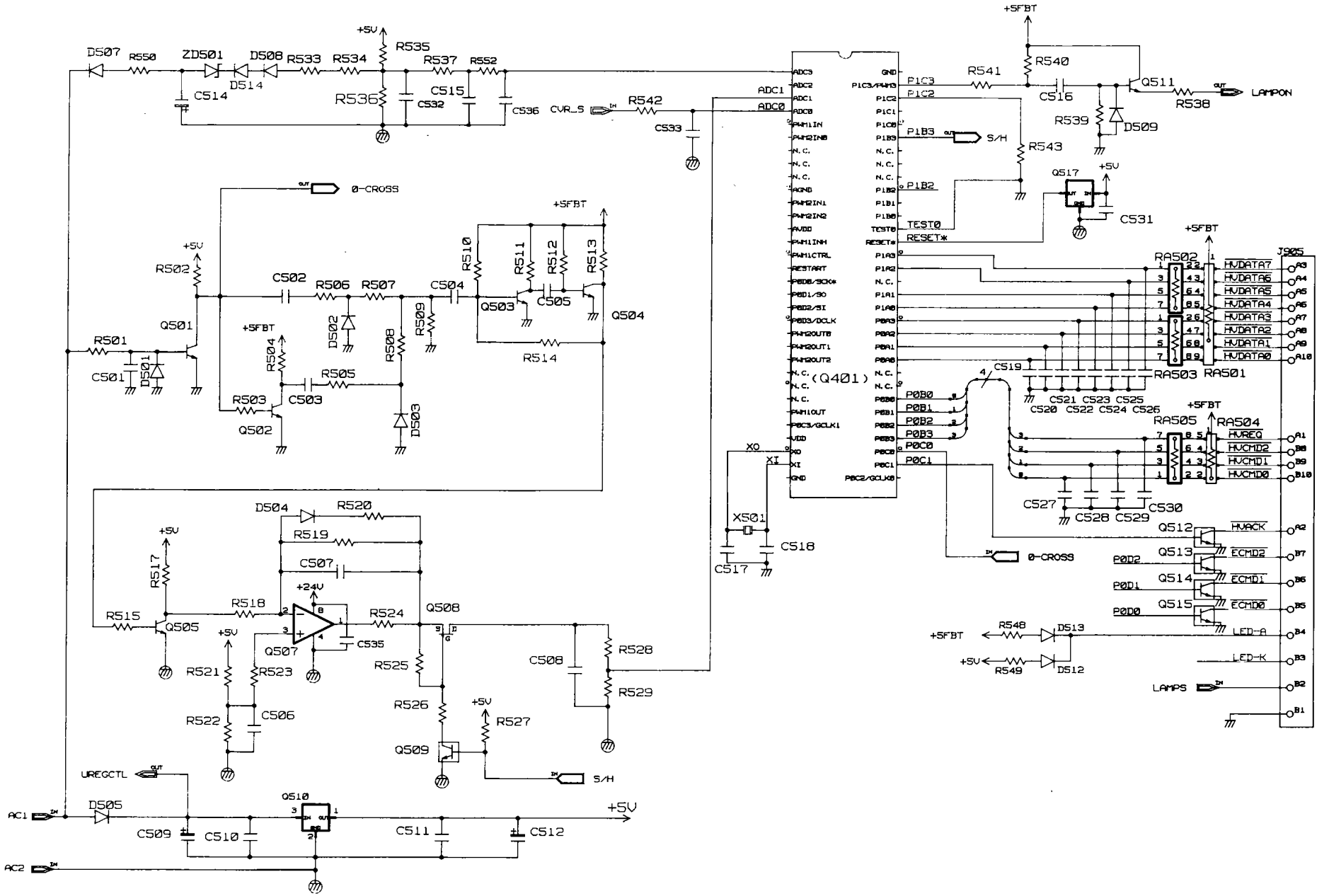


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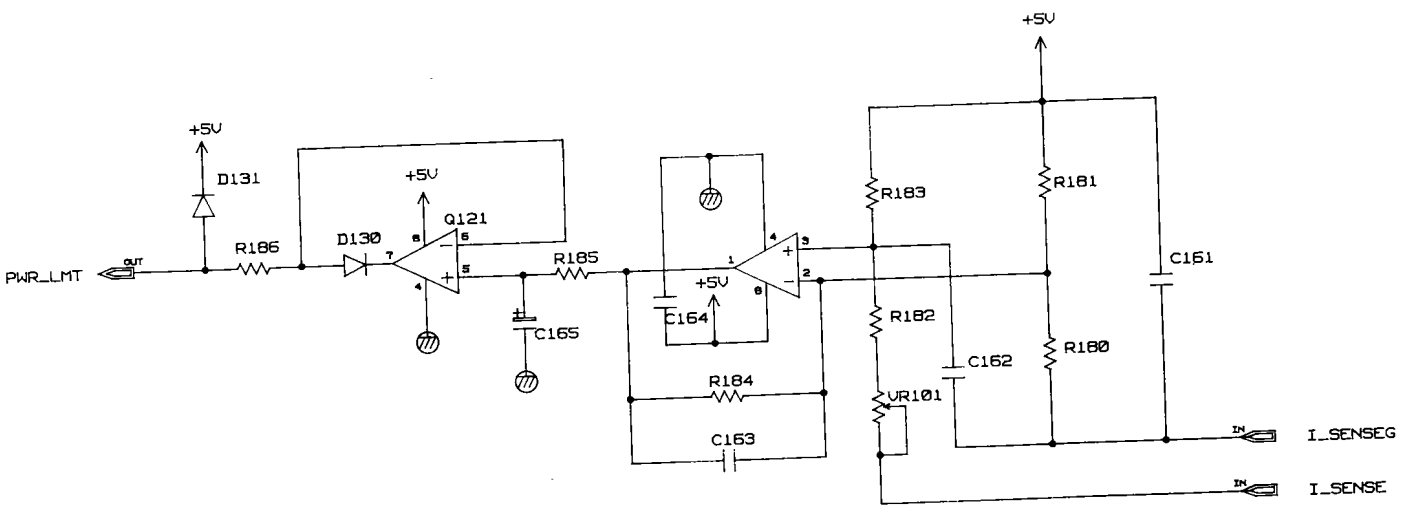


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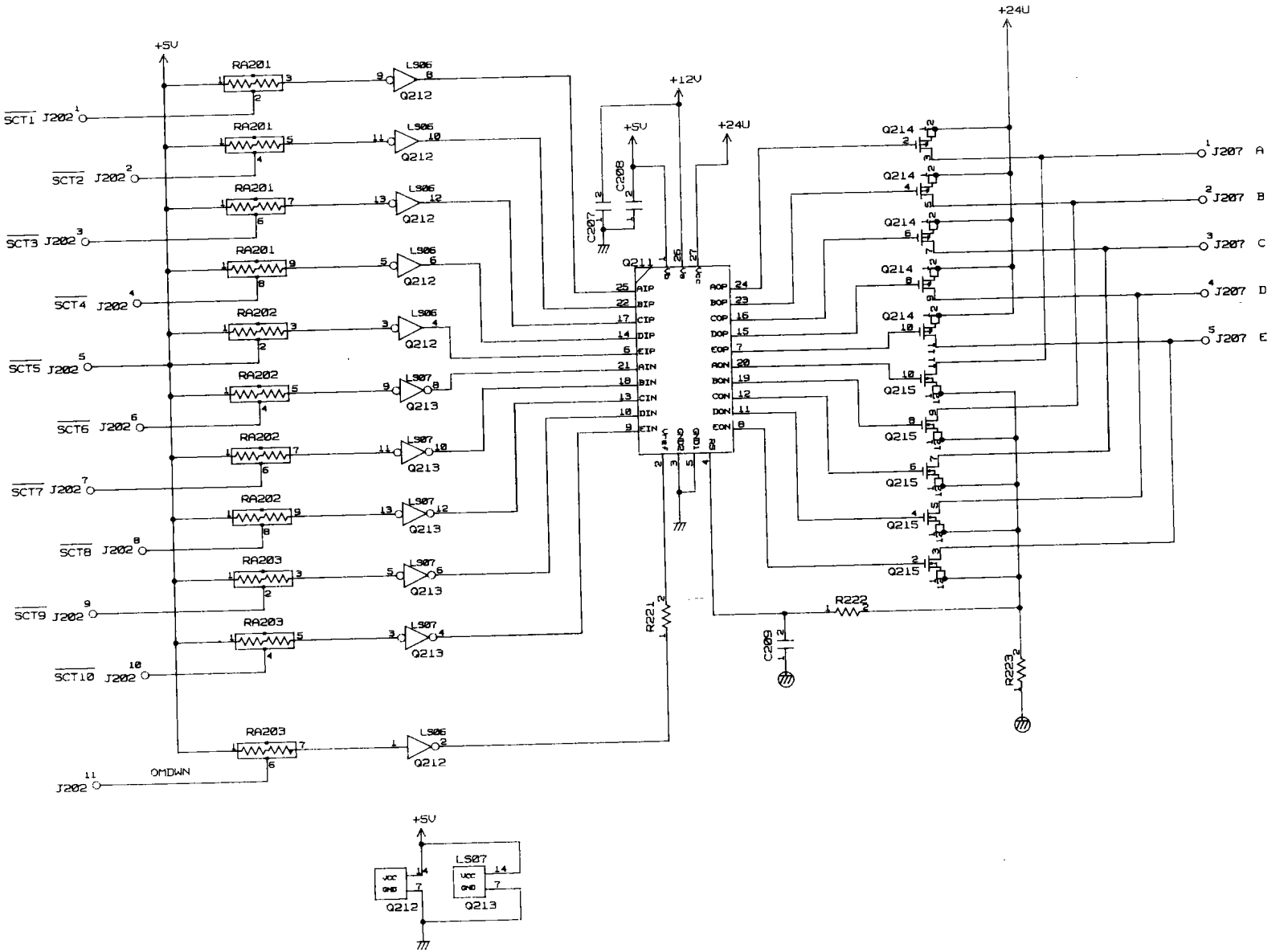
# F. MOTOR DRIVER PCB CIRCUIT DIAGRAM

## MOTOR DRIVER PCB (1/2)



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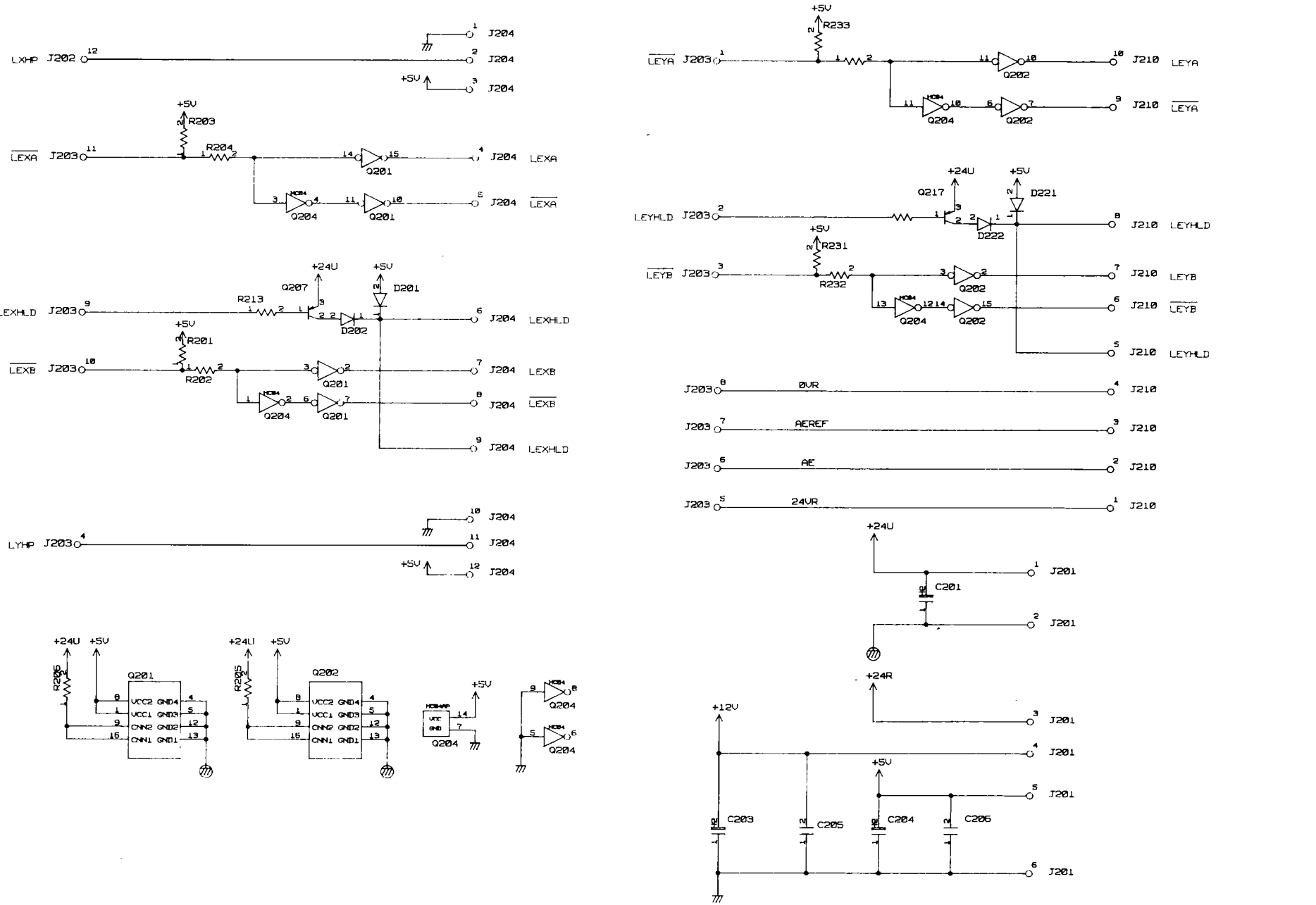




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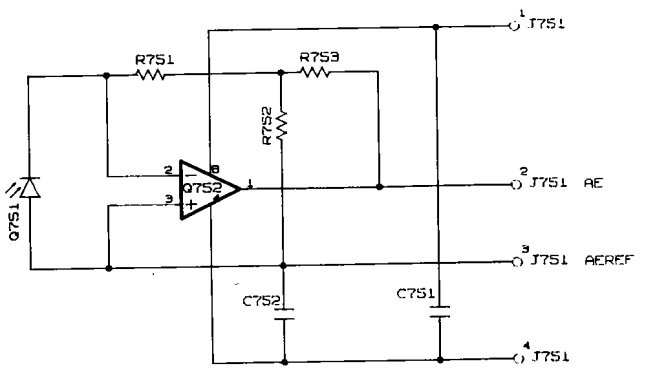
# G. AE SENSOR PCB CIRCUIT DIAGRAM

## AE SENSOR PCB



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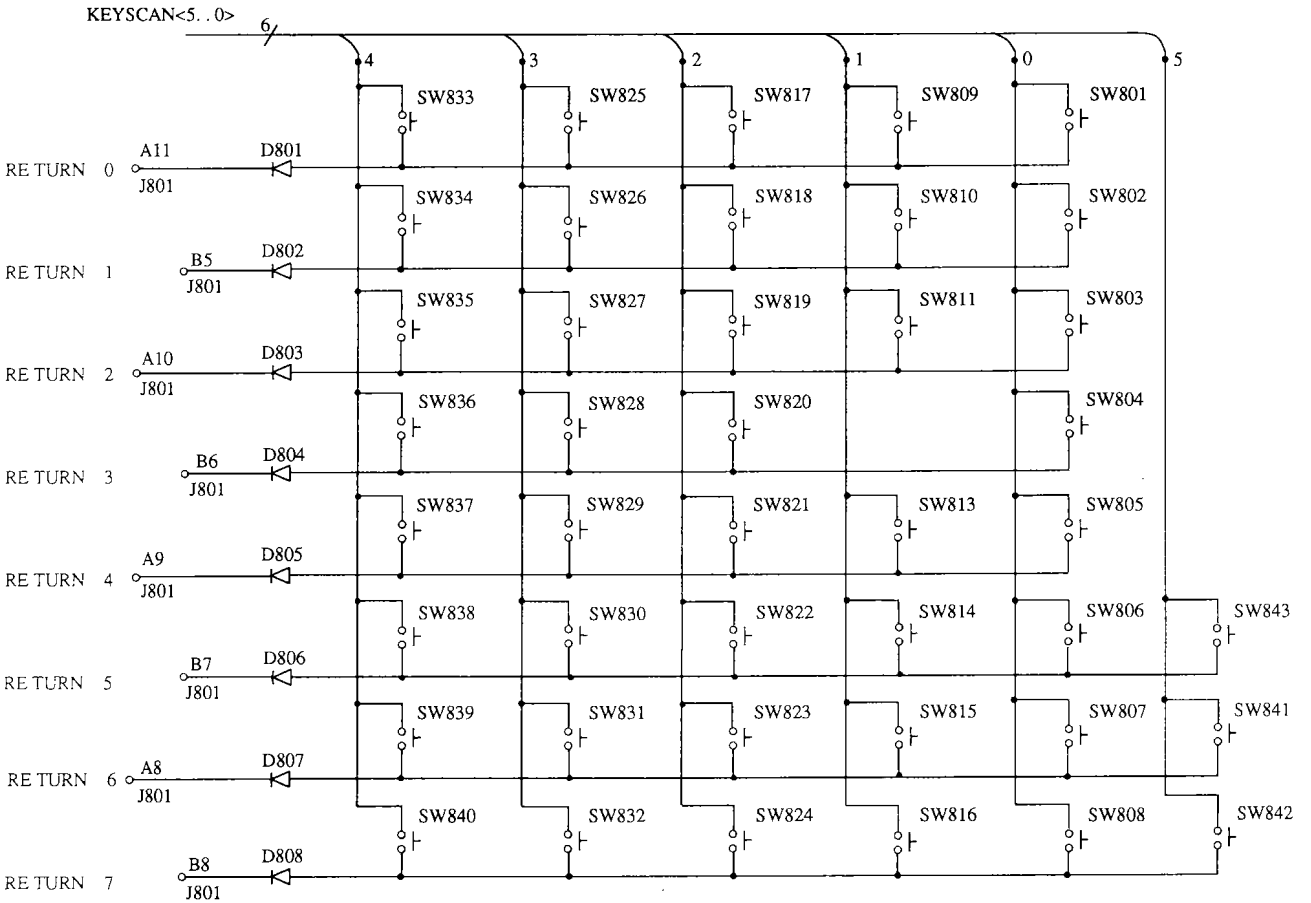
# H. OPELATION PANEL CIRCUIT DIAGRAM

**OPERATION PANEL (1/3)**



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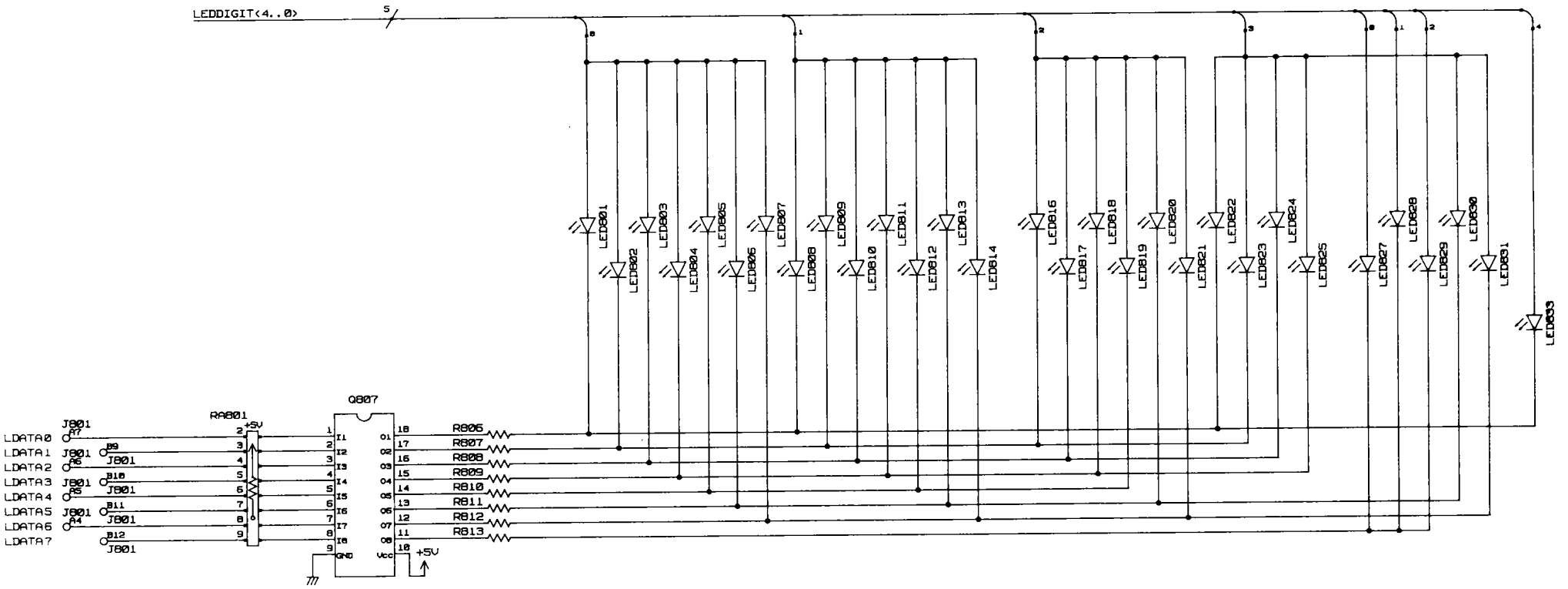




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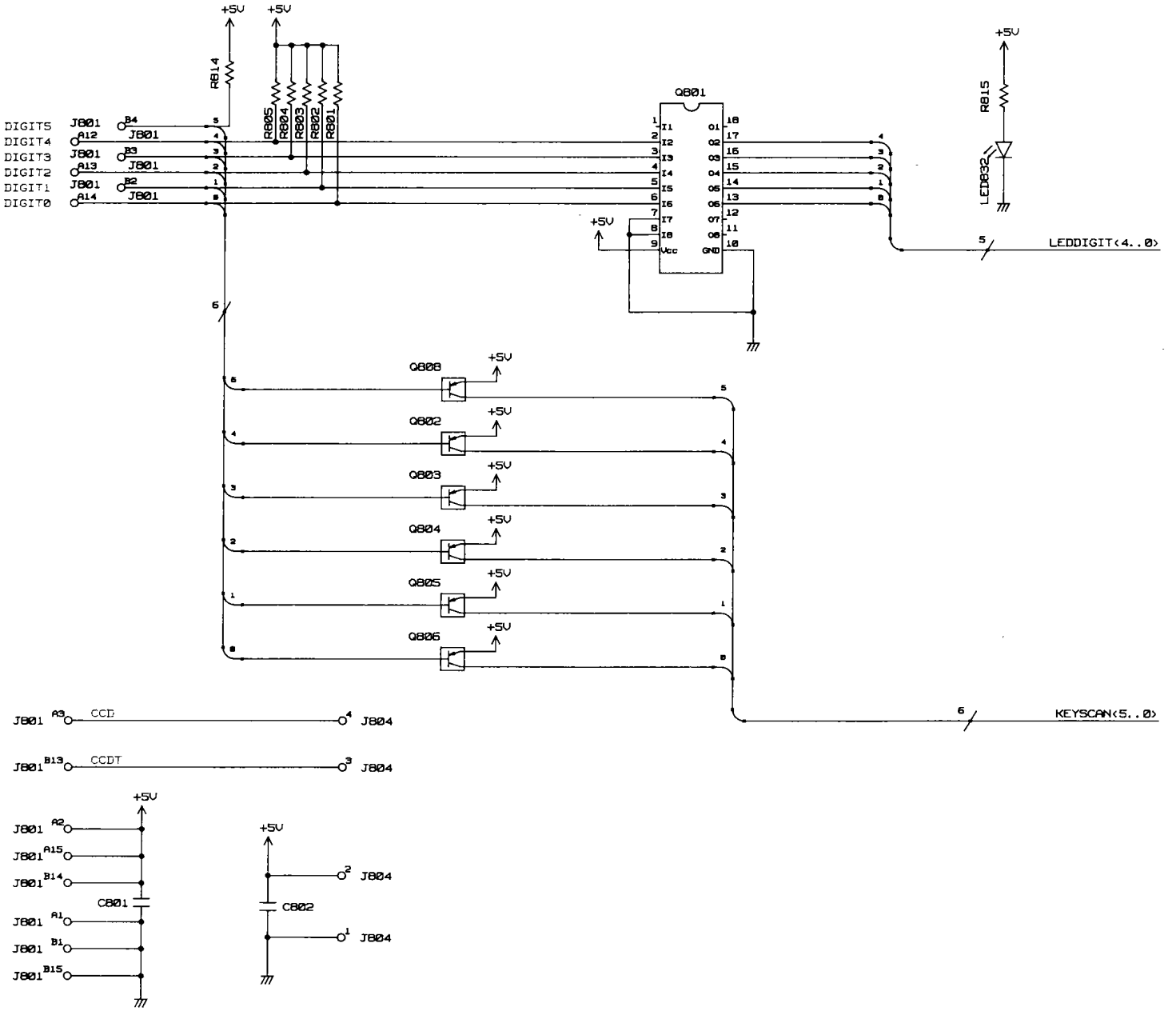




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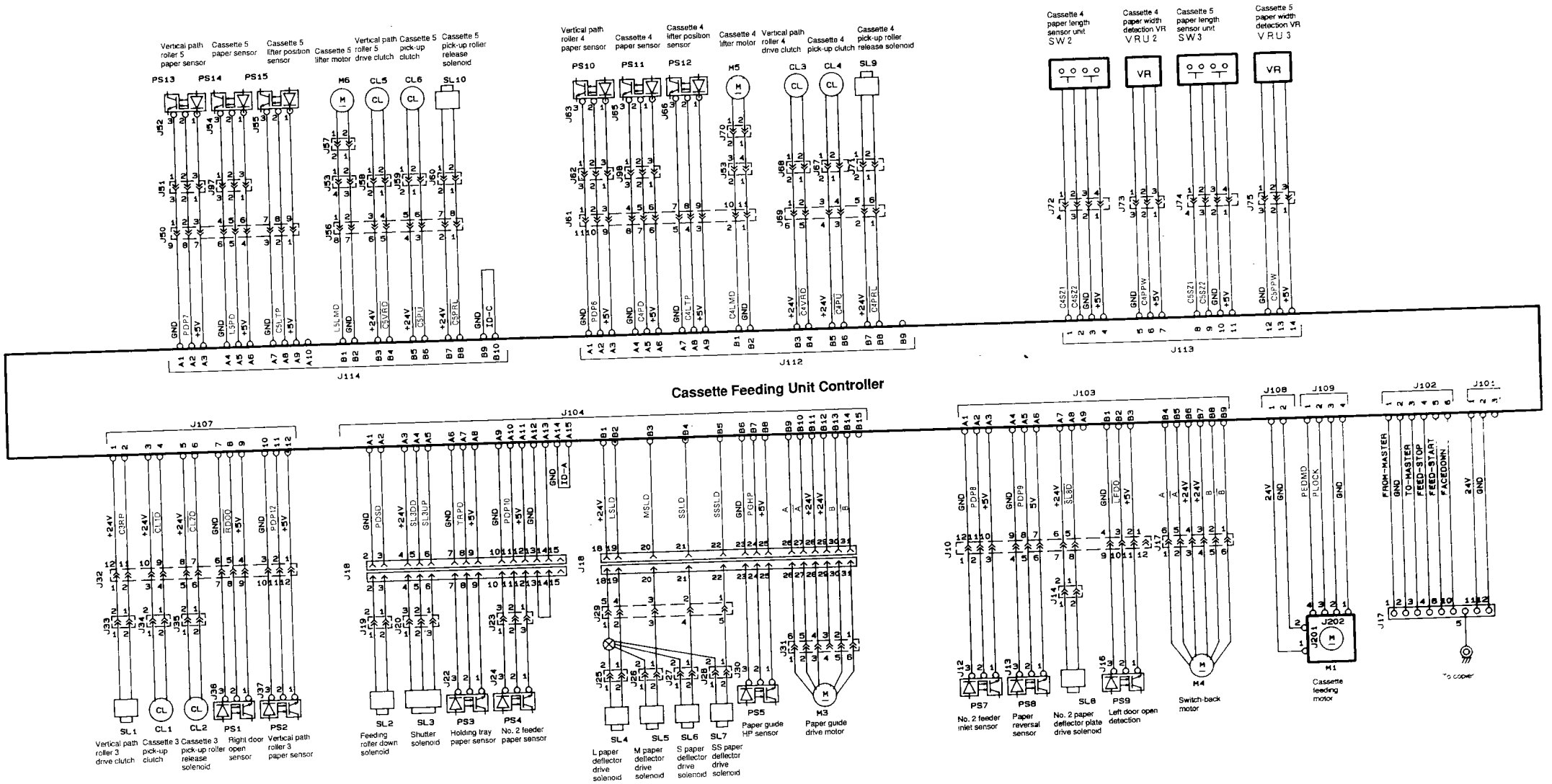
Cassette Feeding Unit Controller
Vertical path roller 5 paper sensor
Cassette 5 paper sensor
Cassette 5 lifter position sensor
Cassette 5 lifter motor
Vertical path roller 5 drive clutch
Cassette 5 pick-up clutch
Cassette 5 pick-up roller release solenoid
Vertical path roller 4 paper sensor
Cassette 4 paper sensor
Cassette 4 lifter position sensor
Cassette 4 lifter motor
Vertical path roller 4 drive clutch
Cassette 4 pick-up clutch
Cassette 4 pick-up roller release solenoid
Cassette 4 paper length sensor unit SW2
Cassette 4 paper width detection VR VRU2
Cassette 5 paper length sensor unit SW3
Cassette 5 paper width detection VR VRU3
Vertical path roller 3 drive clutch
Cassette 3 pick-up clutch
Cassette 3 pick-up roller release solenoid
Right door open sensor
Vertical path roller 3 paper sensor
Feeding roller down solenoid
Shutter solenoid
Holding tray paper sensor
No. 2 feeder paper sensor
Paper guide HP sensor
Paper guide drive motor
L paper deflector drive solenoid
M paper deflector drive solenoid
S paper deflector drive solenoid
SS paper deflector drive solenoid
No. 2 feeder inlet sensor
Paper reversal sensor
No. 2 paper deflector plate drive solenoid
Left door open detection
Switch-back motor
Cassette feeding motor
To copier
J112
J113
J114
J107
J104
J103
J108
J109
J102
J101



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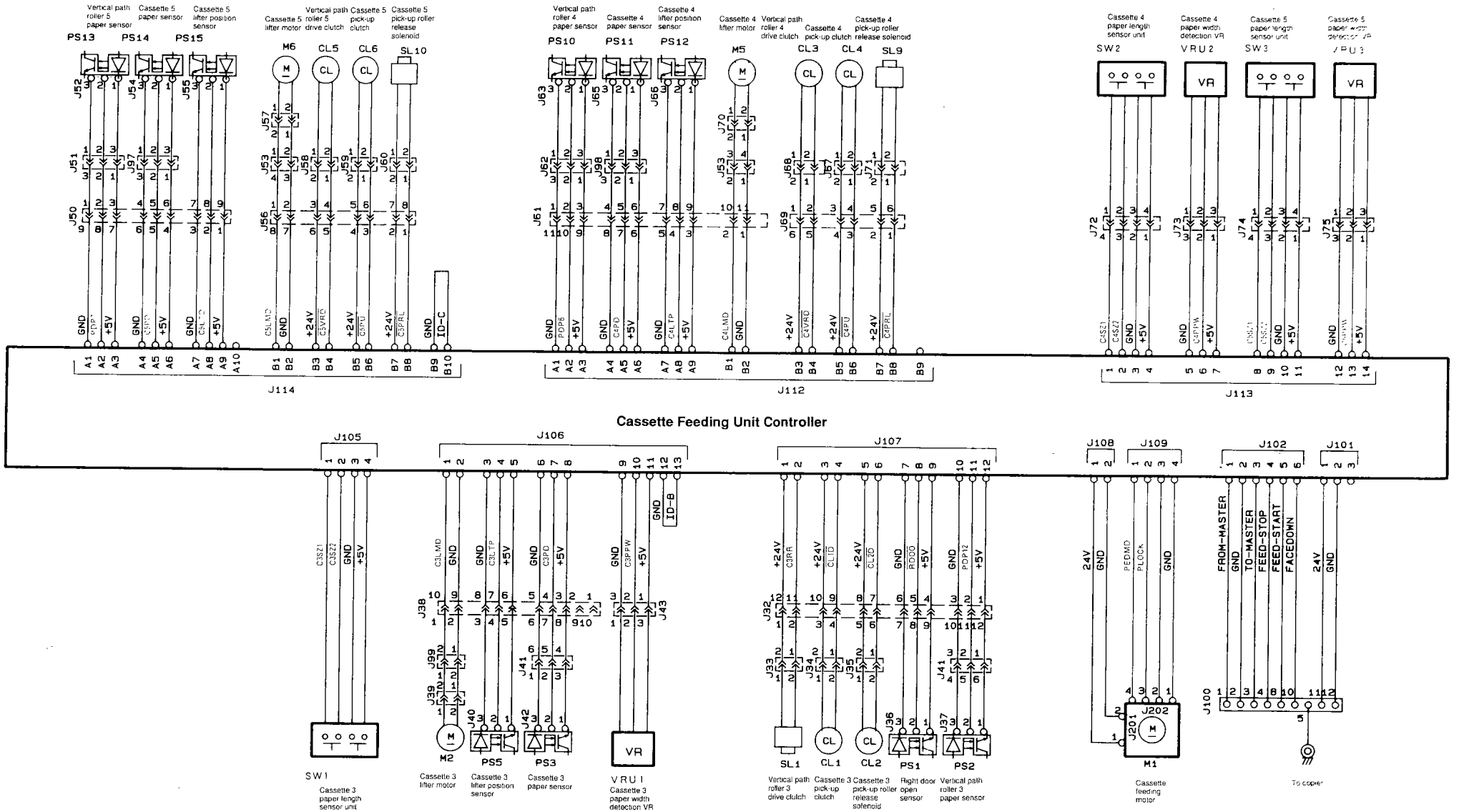
# J. CASSETTE FEEDING UNIT CONTROLLER



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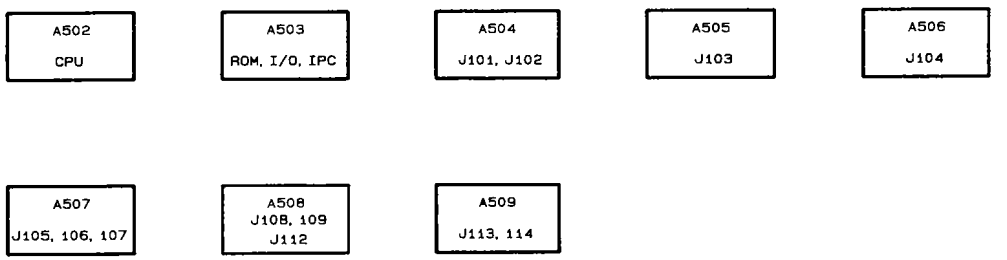
# K. CASSETTE FEEDING UNIT CONTROLLER CIRCUIT DIAGRAM

## CASSETTE FEEDING UNIT CONTROLLER (A501)

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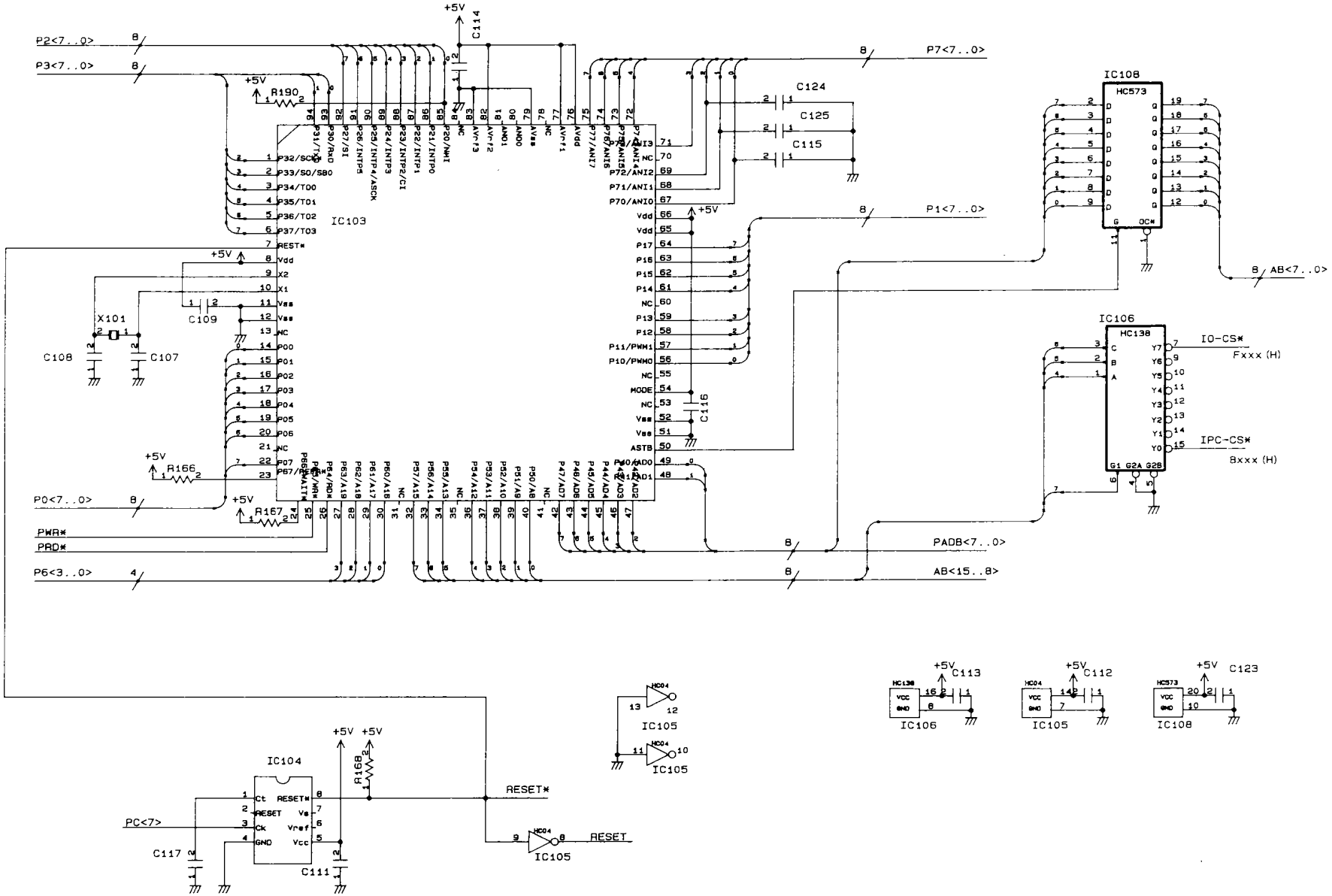
## CASSETTE FEEDING UNIT CONTROLLER (A502)



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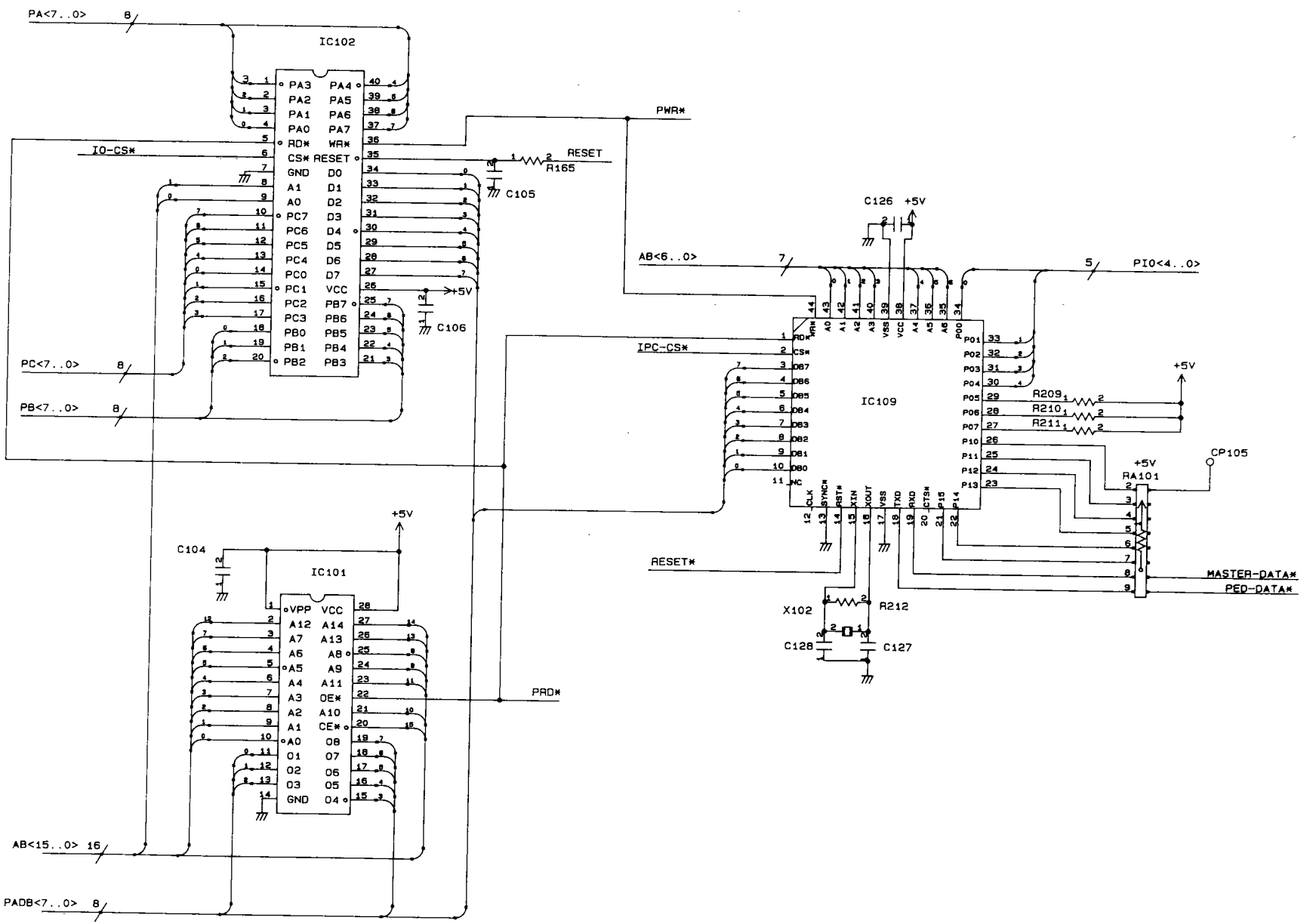


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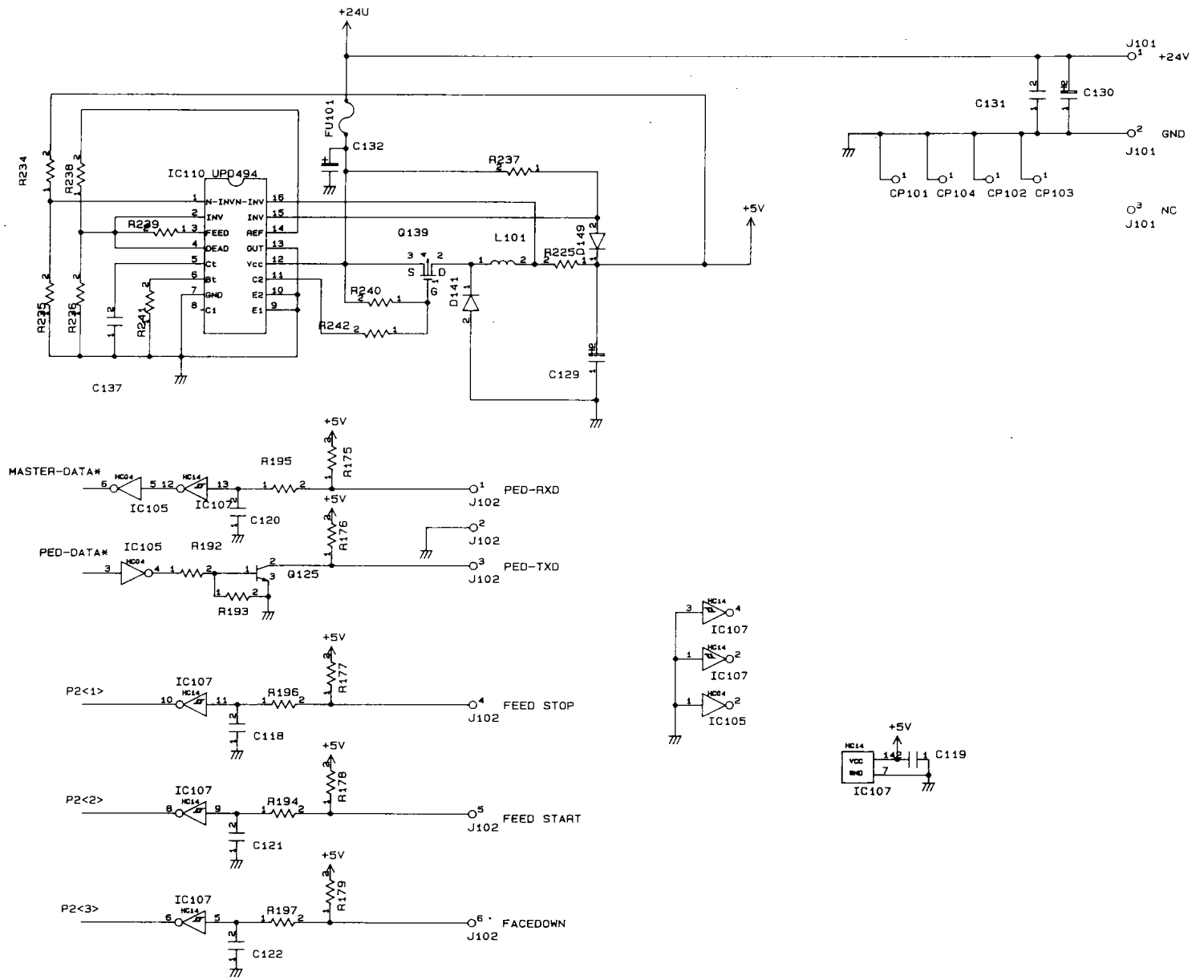
## CASSETTE FEEDING UNIT CONTROLLER (A504)



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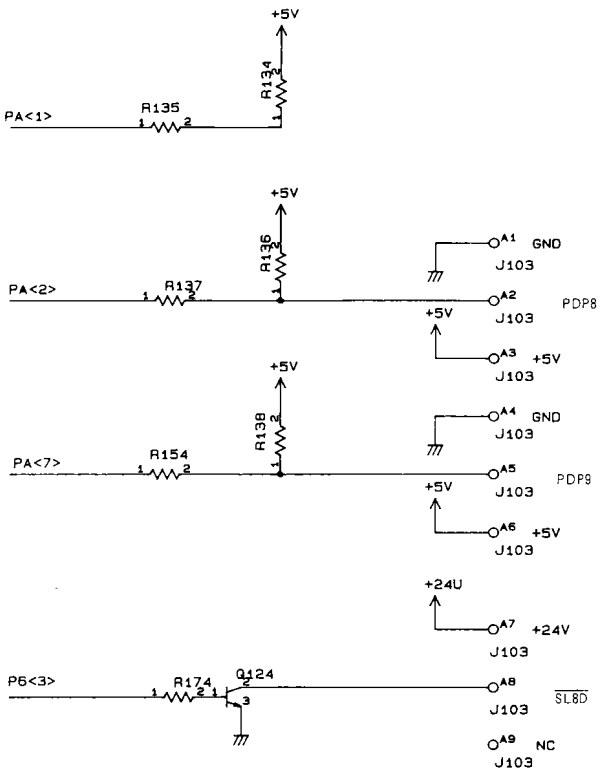


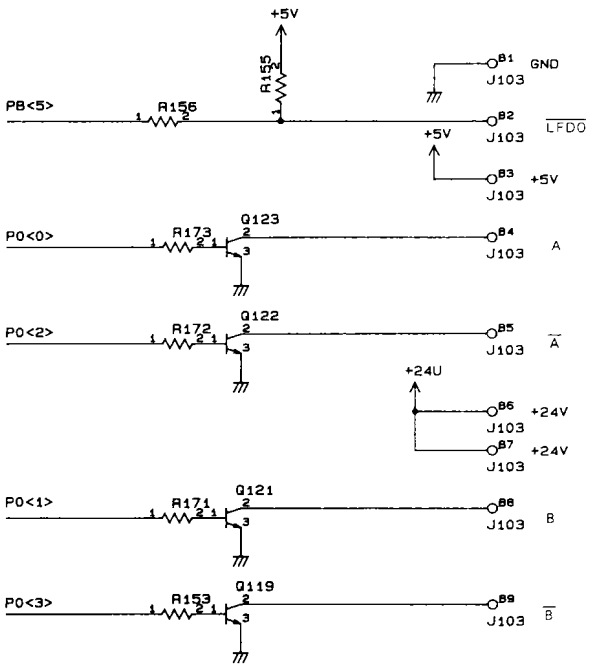


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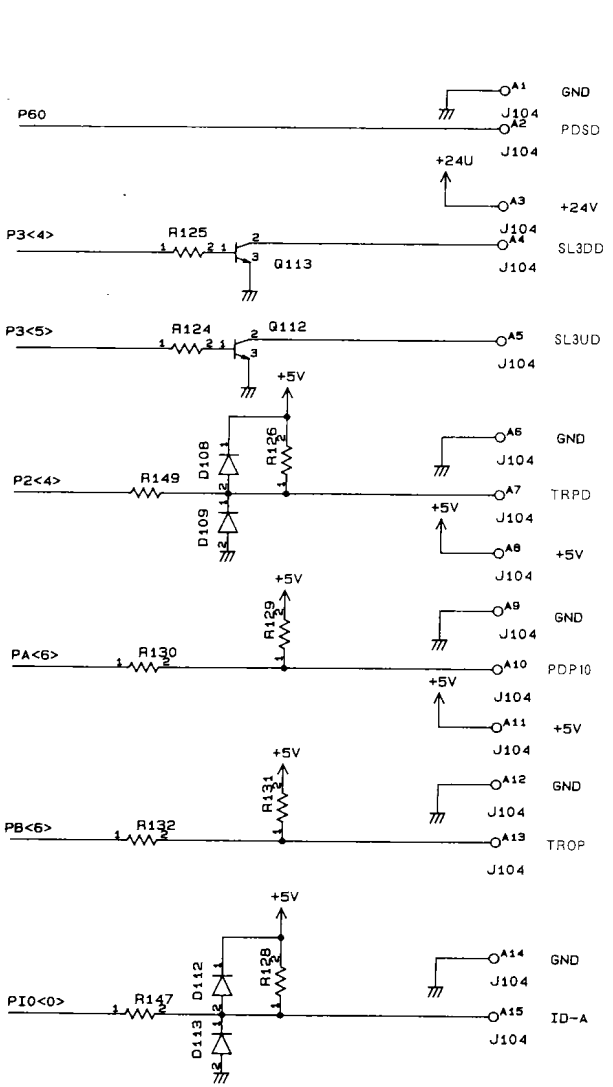
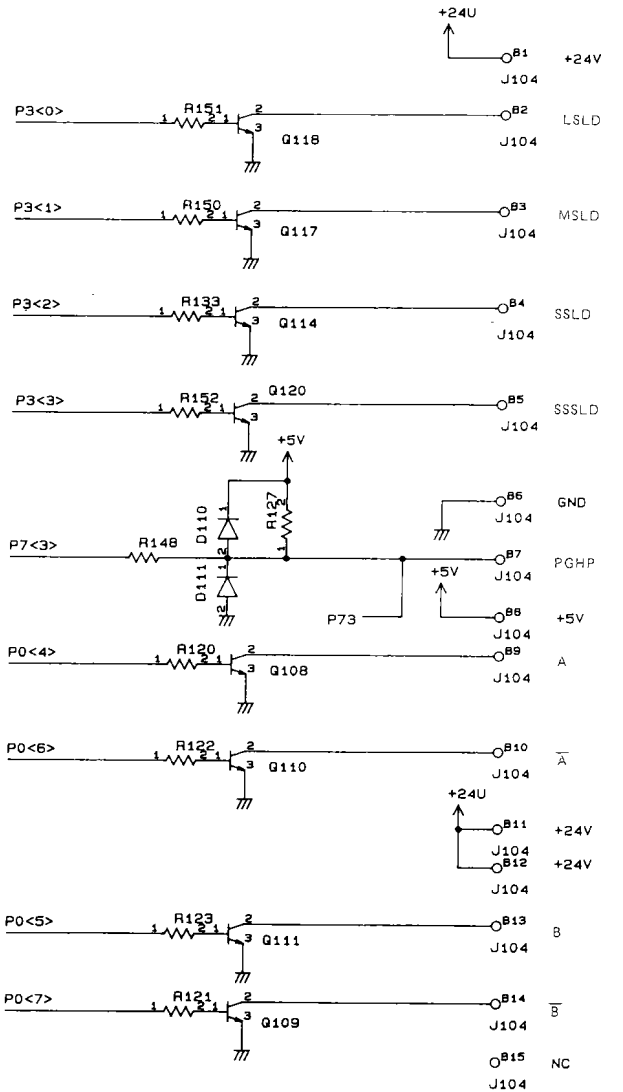
## CASSETTE FEEDING UNIT CONTROLLER (A506)



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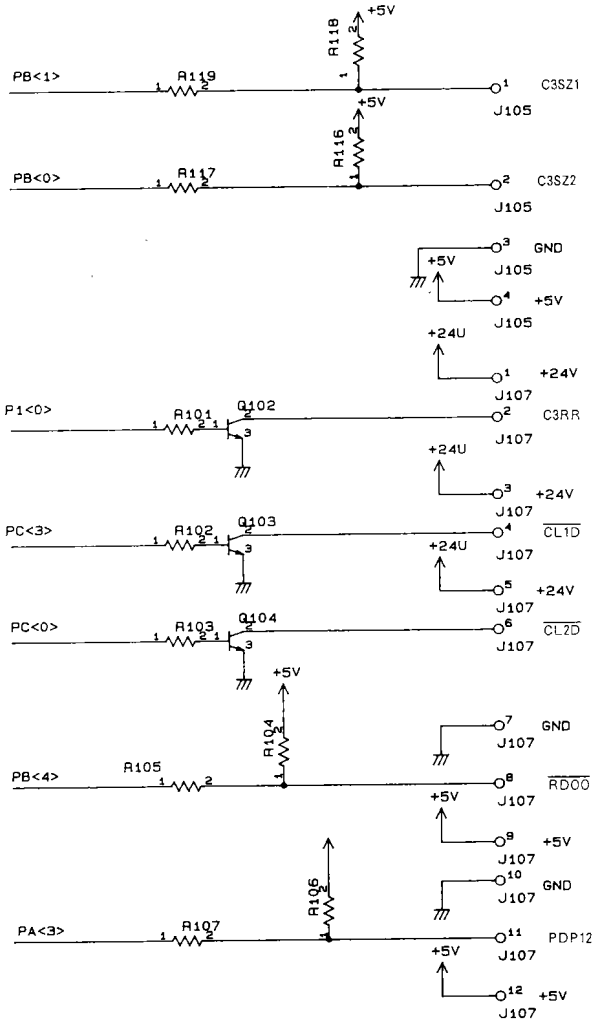


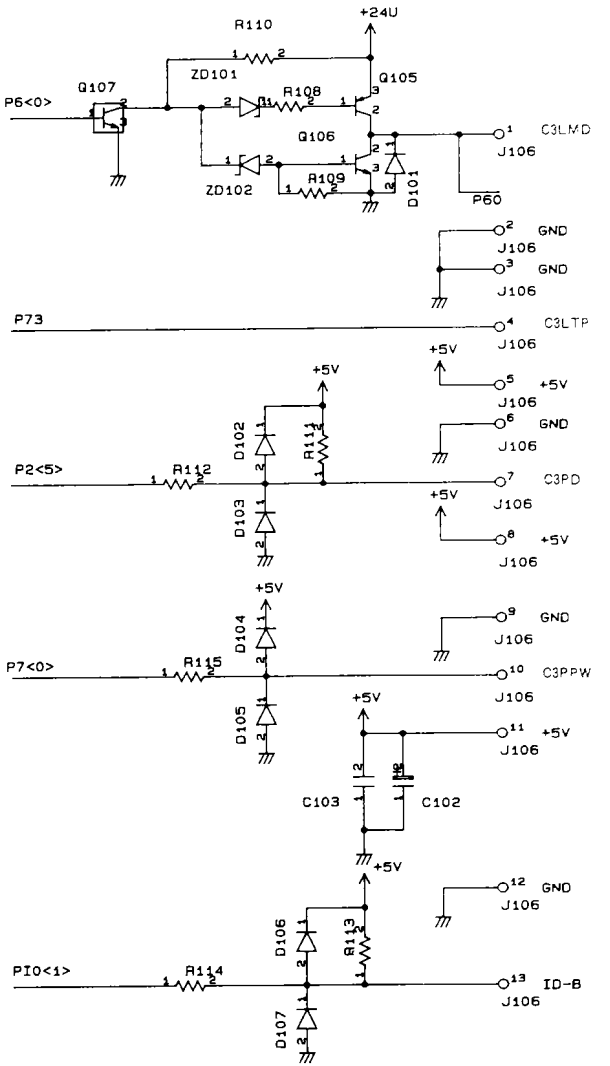


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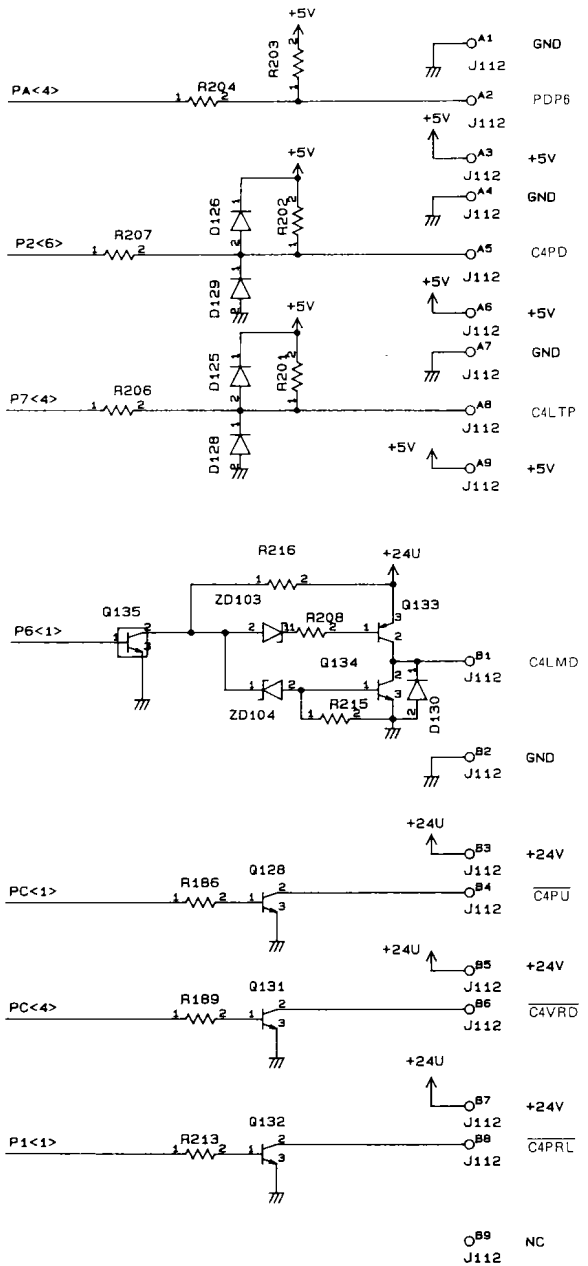
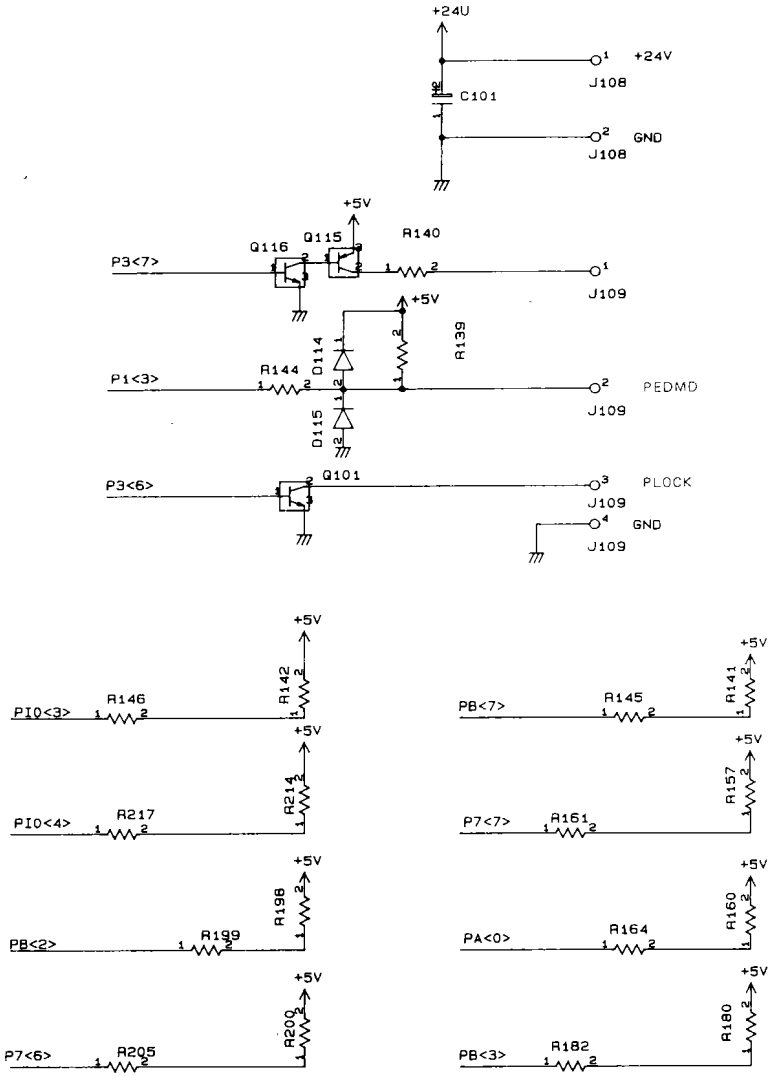
## CASSETTE FEEDING UNIT CONTROLLER (A508)



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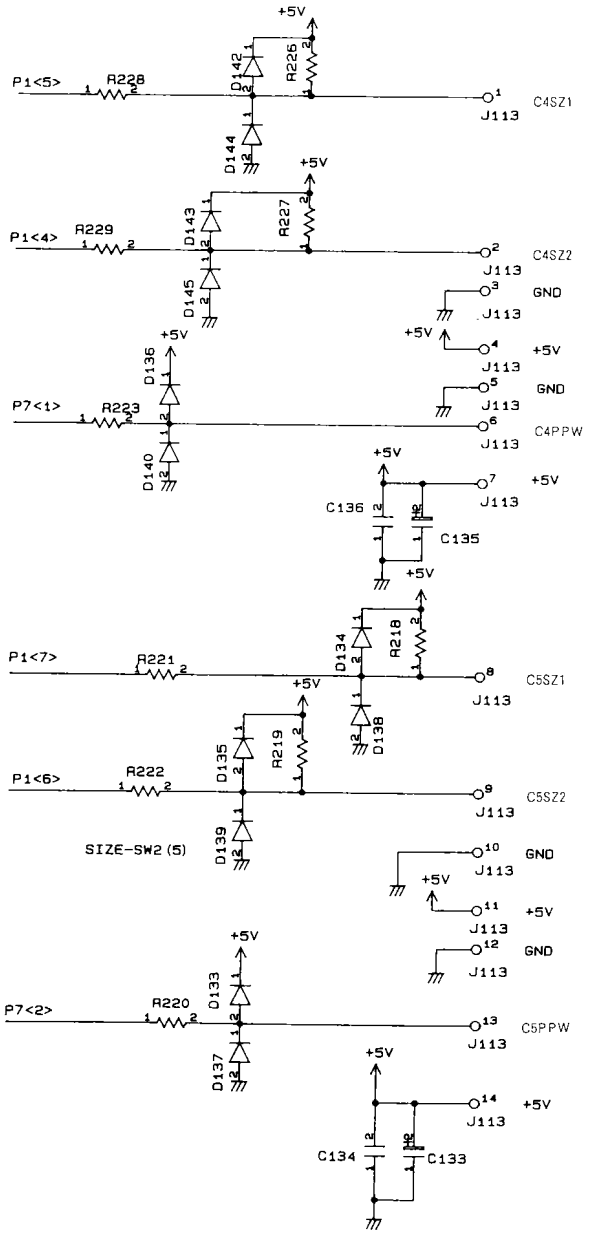


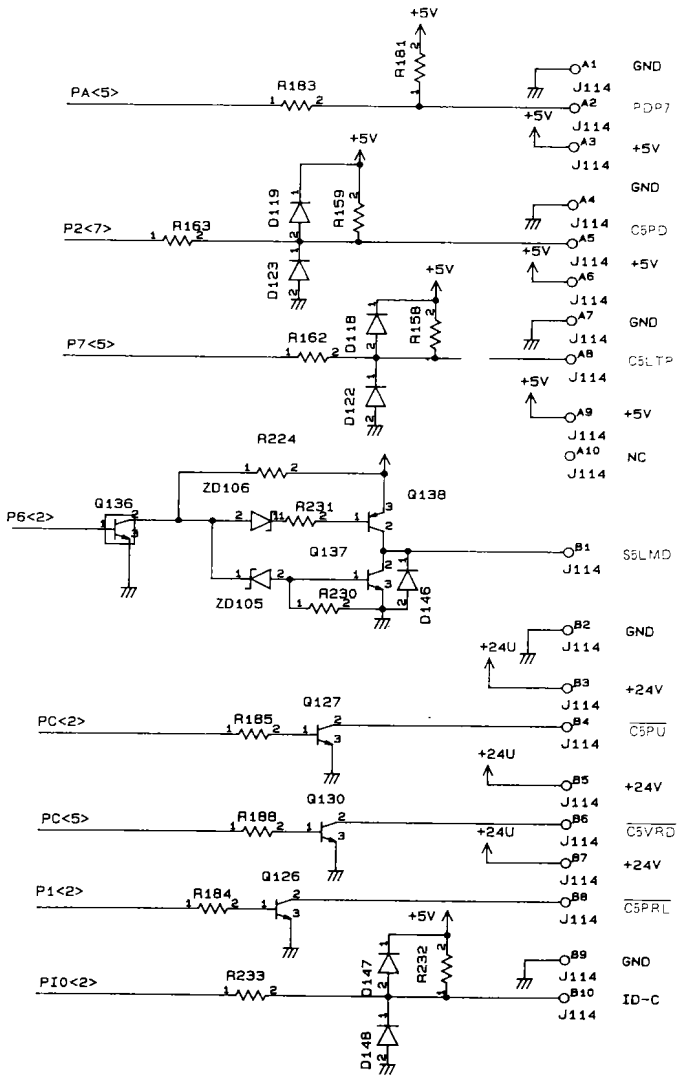


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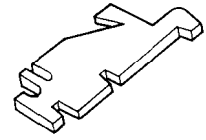
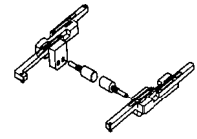
# L. SPECIAL TOOLS TABLE

See the table below for a list special tools used to service the copier in addition to the standard tools set.

| No. | Tool name | Tool No. | Shape | Code* | Description |
|---|---|---|---|---|---|
| 1 | Door Switch | TKN-0093 |  | A | |
| 2 | Mirror Positioning Tool (front, rear) | FY9-3002-000 |  | B | Use it to adjust the distance between No. 1 and No. 2 mirrors. |

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# M. SOLVENTS/OILS TABLE

| No. | Material name | Uses | Composition | Remarks |
|---|---|---|---|---|
| 1 | Ethyl alcohol (Ethanol)<br><br>Iospropyl alcohol (Isopropanol) | Cleaning: e.g., glass, plastic, rubber parts; external covers | $C_2H_5O$<br><br>$(CHZ_3)_2$ CHOH | • Do not bring near fire.<br>• Procure locally.<br>• Ispropyl alcohol may be substituted. |
| 2 | MEK | Cleaning: e.g., metal; oil or toner dirt | $CH_3$ $COC_2H_5$<br>Methylethyl ketone | • Do not bring near fire.<br>• Procure locally. |
| 3 | Heat-resistant grease | Lubricating: fixing drive assemblies | Lithium soap (mineral oil family)<br><br>Molybdenum bisulfate | • CK-0427 (500 g/can) |
| 4 | Lubricating oil | Lubricating: scanner rail, spring clutch | Mineral oil (paraffin family) | • CK-0451 (100 cc) |
| 5 | Lubricating oil | Lubricating: pick-up assembly roller bushing (FS2-1005-000) | Mineral oil (paraffin family) | • CK-0524 (100 cc) |
| 6 | Lubricating oil | Lubricating: drive and friction parts | Silicone oil | • CK-05512 (20 g) |


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